

VOL. I

A DIRECTORY
OF
RESEARCH INSTITUTIONS
OF
GUJARAT

PART I: INSTITUTIONS

PART II. SOUVENIR

PART III PROCEEDINGS OF THE 4th CONFERENCE
OF RESEARCH WORKERS FOR GUJARAT



GUJARAT RESEARCH SOCIETY
AHMEDABAD BRANCH

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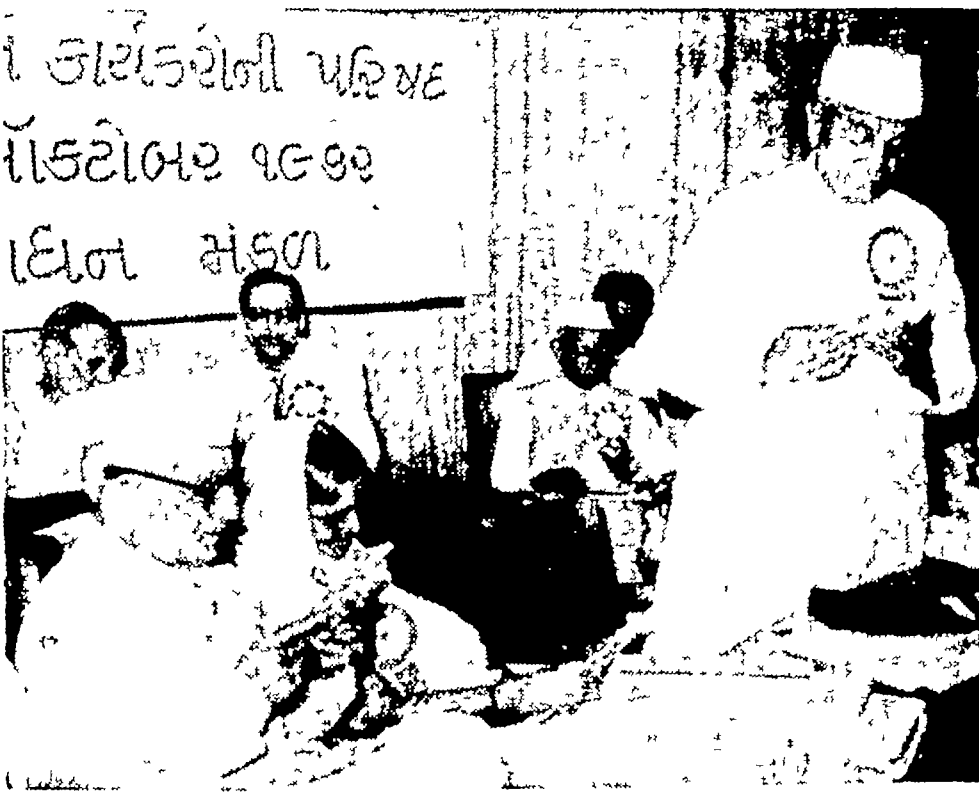
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પ્રમુખસ્થાનેથી :
મા. શ્રી. જીવરાજલાલ મહેતા
વ્યાખ્યાન આપી રહ્યા છે.

ડાબે હાથે મુખ્ય મહેમાન
ડૉ. કનૈયાલાલ મુનશી

સ્વાગતાધ્યક્ષ
શ્રીમતી ડૉ. હંસાબહેન મહેતા
સ્વાગતવ્યાખ્યાન આપી રહ્યાં છે.



જમણે હાથે છેલ્લા
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મસુખશ્રીને હાર પહેરાવે છે.



પરિષદનો વિકાસ શ્રોતૃવર્ગ



INTRODUCTION

The publication of the Directory of Research Institutions of Gujarat with the Proceedings of the 4th Conference is the last of the series of the literature published by the Gujarat Research Society on the occasion of the 4th Conference of Research Workers for Gujarat held under encouraging circumstances on 19th October, 1962 at Ahmedabad under the patronage of the Governor and the Presidentship of Dr. Jivraj N. Mehta.

The Gujarat Research Society was founded in October 1936 at Bombay and the Ahmedabad Branch was initiated in March 1961, a few months after the formation of the Gujarat province. The Society was formed with the object of arranging, organising and coordinating research in various branches of knowledge with special reference to Gujarat as it was known in 1936. 24 volumes of the Journal and its numerous publications and its activities in the cause of research stand to the credit of the Society.

The present volume, however imperfect, has been delayed owing to the difficulties in securing correct and full information, shows how research is organised in the Gujarat region by Government departments, Universities other independent institutions and individual scholars in the State. This compilation by a voluntary organisation, is an effort at the coordination and to prevent duplication of research in the region.

Research has no geographical or regional boundaries and by adopting the motto "do research for the good of mankind" the Society has made it clear that it does not stand for any narrow regionalism.

The Society is grateful to the Honorary Director Prof. K. K. Shastree and the Gen. Secretary Shri L. R. Fozdar for organising all work in connection with the Conference and the various publications on this occasion and to Mr. P. G. Shah, President of our Society, who ably conducted the Conference and got the literature of repute for these publications.

We are also very much grateful to the Ministry of Education, the State of Gujarat, for sanctioning a publication grant of Rs. 5000/-, without which we would not have been able to get all these works published.

Hansa Mehta

Chairman - Ahmedabad Branch
Gujarat Research Society

23rd Feb., 1963

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A DIRECTORY

of

RESEARCH INSTITUTIONS OF GUJARAT

On the occasion when the Fourth Conference of Research Workers for Gujarat is being held at Ahmedabad it is natural one may ask questions: "What is the position of Research in Gujarat to-day ? How far is it intensive and extensive ? What has been done and what is to be done in all fields of knowledge ?" To answer these and such other questions, a brief account of research activities of various Research Institutions of Gujarat is given below.

I. GOVERNMENT DEPARTMENTS

DEPARTMENT OF EDUCATION, GUJARAT STATE

This Directorate of Education with other activities promotes the research work in education. The Research Officer Kum. Urmila V. Dave looks after it. The information regarding research work so far completed by various educational institutions in the state of Gujarat is given in Appendix I.

DIRECTORATE OF AGRICULTURE & ANIMAL HUSBANDRY, GUJARAT STATE

There is a great zeal for research among the agricultural officers and members of the staff at various farms and agricultural colleges running under the supervision and guidance of the Directorate of Agriculture and Animal Husbandry of Gujarat State. As a result there have been many experiments of enhancing yields of major crops like cotton, wheat, rice, jowar, bajri, tobacco, sugarcane, maize, etc. and protecting them from pests and diseases. A number of papers on these problems have been published so far.

Recently the Indian Council of Agricultural Research has sanctioned a scheme, viz. 'Micronutrient status of Gujarat soils', proposed by this Directorate. Research problems on soils, irrigation, water, fertilizers and manures will also be tackled under Post-Graduate studies at Agricultural College, Junagadh.

DRUGS LABORATORY, BARODA

Testing Section is an essential wing of the Administration and it is for this reason that a plot of land measuring about 7 acres on the University Campus

was acquired and the Govt. gave administrative approval to the plans and estimates amounting to Rs. 20,34,188 for the construction of an independent Laboratory of the Drugs Control Administration at Baroda. The foundation stone of this Laboratory was laid by Dr. Jivraj N. Mehta. The Laboratory was shifted to the New Building in November 1961 and will have six Divisions :

1. Division of Pharmaceutical Chemistry,
2. Division of Pharmacology,
3. Division of Microbiology,
4. Division of Bacteriology,
5. Division of Pharmacognosy,
6. Division of Biochemistry

The Laboratory has a carpet area of 36,000 sq. ft. A two storied (partially air-conditioned) independent Animal House to help the above Divisions has also been built. The Laboratory will also have a fairly well-equipped Workshop, Auditorium, Library, Cold Rooms, etc. In addition to testing the samples of drugs that are picked up by the Drugs Inspectors, the Laboratory will also be able to undertake the work of analysis of samples of pharmaceutical manufacturers, who do not have adequate facilities of their own. The Laboratory will also provide facilities for the pharmaceutical industry to train their staff on advanced analytical methods and also serve as a pattern to be incorporated by them in planning of their own Control Laboratories. With a view to increase the usefulness of Laboratory to the industry, it is proposed even to take analytical problem of the industry.

THE DIRECTORATE OF FISHERIES, GUJARAT STATE

The Directorate of Fisheries, Gujarat has research establishments at the following places :

Ahmedabad, Jamnagar, Veraval, Okha, Billimora.

The following schemes are being implemented by the Directorate :

- (a) Survey and Exploratory fishing in Gujarat Waters. The total estimated outlay of the Scheme during the III Five year plan is rupees 9 lacs.
- (b) Research and Investigations on shell fisheries. The estimated outlay is rupees 4 lacs.
- (c) Aquaria-cum-fresh water research Laboratory at an estimated outlay of Rs. 1,26,000/-.

The Directorate has purchased three fishing vessels of 49' OAL for the purpose of the survey. Field laboratories have been established at Jamnagar, Okha, Veraval and Billimora which are manned by scientists and where facili-

ties have been provided to store and index the specimens collected during the survey and also to analyse the data.

Material Published So Far By The Department :

- Gokhale, S. V. Easwaran, C. E. 1954 and Narsimhan, R. The rate of Growth of pearl oyster in the gulf of Kutch. Bom. Nat. Hist. Society 1954. :
- Gokhale, S. V. 1955 : Recovery of a Fishery—Current Science, 1955
- “ “ 1956 : Seasonal Histological changes in the gonads of Whiting and the Norway in the Irish Sea. Indian Journal of Fisheries.
- “ “ 1957 : Operation of the Dol Net in Saurashtra waters. Jour. Bom. Nat. Hist. Soc. 1957
- “ “ 1960 : Need for fisheries research in Gujarat. Souvenir published by the Directorate in Oct. 1960.
- “ “ Lakumb, N. C. and Joshi, M. N. 1961. Fishing Gear of Saurashtra Region. Souvenir published by the Gujarat Fisheries Central Co-Op. Association—Ahmedabad 1961.
- “ “ and Spare, P. B. 1961. Trends of Mechanisations in the fishing fleet of Gujarat State—Ibid.
- Desai, B. N. 1962 : A preliminary note on the Eggs and Larvae of some Marine Molluses of Bombay—Current Science, 1962.
- Srivatsa, R. R. 1954 : Boats and gears of Saurashtra Fisherman. Published by the Department of Ind. and Com. Saurashtra Government.
- “ “ “ 1964 : Marine Fisheries of Saurashtra—March of India, New Delhi.
- “ “ “ 1954 : Towards mechanisation of fishing crafts. Published by the department of Ind. and Com. of Saurashtra Government.
- “ “ “ 1954 : Crafts and Tackles of Saurashtra, 5th meeting of I.P.F.C. Bangkok.
- “ “ “ 1954 : Marketing and Preservation of fish in Saurashtra. Ibid.
- “ “ “ 1954 : Survey and compartive analysis of the Prawn fisheries of the Gulf of Kutch.

DIRECTORATE OF LABOUR AND EMPLOYMENT, GUJARAT STATE

The Directorate of Employment, Gujarat State, Ahmedabad among other things conducts manpower studies on employment in the State and also carries out research and job analysis with a view to define various occupations under the administrative supervision of the Director of Employment. Two special schemes viz: (1) Collection of Employment Market Information and (2) Occupational Information and research analysis have been set up in the Directorate of Employment, Gujarat State.

(1) Scheme for Collection of Employment Market Information :

Under this scheme, quarterly studies of employment in the entire public sector of the Gujarat State is being carried out on quarterly basis through the net work of the Employment Exchanges and through specially designed "Establishment Reporting" system. Information is collected of employment at the end of two quarters with a view to study the trends of employment and changes in employment and the reasons for employment fluctuation. Quarterly reports on these studies in the public sector are prepared and published on quarterly basis. So far 8 such reports for the entire public sector have been published. 3 reports were issued in 1960, 4 in 1961 and 1 in 1962.

Similar studies are also undertaken in the private sector covering employers employing 5 or more persons. At present these studies are confined to only 5 districts i.e. Rajkot, Ahmedabad, Baroda, Surat and Jamnagar. For Rajkot District, 8 reports have been published so far i.e. 5 in 1960 and 3 in 1961. For Ahmedabad, 4 reports were issued i.e. 3 in 1961 and 1 in 1962. For Baroda, 4 reports were issued i.e. 3 in 1961 and 1 in 1962. For Jamnagar, 6 reports were published i.e. 1 in 1960, 4 in 1961 and 1 in 1962.

(2) Occupational Information and Research Analysis

Under this scheme, it is contemplated to carry out job analysis and prepare definitions of various occupations and publish them in book form. The unit is also responsible for collecting information regarding training facilities both institutional and inplant throughout the State and publish information in a suitable Hand-book on training facilities. Preparation of career pamphlets is also one of the functions of the unit. The occupational information unit has been set up only recently in May 1962 and as such much leeway or ground has to be covered before bringing out any publication.

(3) Scheme of Socio-Economic Enquires :

Under the above scheme this office conducts Socio-Economic Enquires pertaining to labour employed in certain selected industries as shown in the annexure 'A' prior to bifurcation. The above scheme was directly implemented in whole of the State including the area now falling in the new State of Gujarat by the office of the Commissioner of Labour, Bombay. Till bifurcation the following enquiries were initiated and completed :

I. Preliminary Minimum Wage Surveys (1) Shops and Commercial Establishments (Cities having one lac or more population)

(2) Theatres,

(3) Studios,

(4) Plastics,

(5) Hospitals,

(6) Jari,

(7) Dyeing and Printing of cloth,

(8) Powerloom and Handlooms.

II. Minimum Wages Evalution Surveys : (1) Local Authorities.

III. Family Living Surveys : Family Living Surveys were completed at 8 selected centres out of which 3 centres viz. Jamnagar, Baroda and Surat now fall in the areas comprising the State of Gujarat.

After bifurcation the above scheme was continued in the new State of Gujarat and till now the following further surveys have been initiated and completed .

(I) Preliminary Minimum Wage Surveys :

- (1) Rubber,
- (2) Rope, Tape and Twin making industry,
- (3) Bush making industry,
- (4) Glass.
- (5) Potteries,
- (6) Paper Board/Straw Board.

(2) Minimum Wage Evaluation Surveys in scheduled employment :

- (1) Oil,
- (2) Printing Press,
- (3) Cotton Gins and Presses.

Out of the above mentioned surveys, report in respect of only one enquiry viz. Shops and Commercial Establishments was drafted and submitted to former Government of Bombay prior to bifurcation. In this connection, it is now learnt that the office of the Commissioner, Maharashtra State, have also drafted reports on Theatres, Studios and Plastic industry survey, copies of which have been received in this office. This above referred reports are combined reports for the State of Maharashtra and New State of Gujarat as surveys were undertaken prior to bifurcation. This office so far have not published any reports after bifurcation as arrangements for mechanical processing of data have been not completed.

STATE HEALTH ORGANISATION, GUJARAT STATE

The following research projects have been undertaken in Gujarat State :

Project I

To find out the incidence of venereal diseases, nutritional deficiencies and diet survey, helminthic infections among the Dangis. This project has been undertaken under the auspices of Indian Council of Medical Research and is nearing completion.

Project II

To study the Health Hazards in sewage farming three types of villages are included in the study :

- (a) Villages using raw sewage for farming;
- (b) Villages using treated sewage for farming;
- (c) Villages where farming is done without using sewage as manure.

The study is under progress.

Project III

To study the incidence of venereal diseases in Banaskantha district, amongst the Adivasi population.

Project IV

To study Morbidity incidence in specific age groups. This study is proposed to be undertaken at Bavla Health Unit by the Medical Officer of Health with grants from I.C.M.R.

The members of the Organisation, Dr. T. B. Patel, Dr. V. H. Thakor, Dr. G. J. Ambwani, Dr. (Mrs.) P. Verma and Dr. T. J. Bornan, Dr. V. D. Shah, Dr. N. D. Mehta and others are deeply interested in research and have prepared and published research papers on various health problems.

CENTRAL SALT & MARINE CHEMICALS RESEARCH INSTITUTE, BHAVNAGAR

This Institute was established in 1954 and the main functions of the Institute are to devise methods for (1) improving the quality of salt and (2) the recovery and utilisation of byproducts from marine and lake bitters and to investigate possibilities of producing industrially important chemicals from marine chemicals. The work of the laboratory is carried out in the following four divisions :

1. Inorganic Chemistry,
2. Physical Chemistry,
3. Chemical Engineering,
4. Algology.

The Institute has devised methods for the production of salts for various uses. The most important among them being the manufacture of Table Salt, Dairy Salt, Salt for Fish curing and Salt Licks for cattle. These processes have now been taken over by some commercial firms for exploitation.

The Institute has made a complete theoretical study of phase rule system of the Sambhar Lake bitters and has worked out processes for the manufacture of sodium sulphate, sodium carbonate and sodium chloride from the lake bitters.

Processes have also been developed for the utilisation of marine bitters for the manufacture of Potassium Chloride, Magnesium Sulphate, Light Basic Magnesium Carbonate, Sodium Sulphate, Bromine etc. The Institute has carried out some work on evolving an efficient solar still for getting fresh water from sea-water. The utilisation of sea-water for irrigation purposes is also proposed to be taken up.

LADY WILSON MUSEUM, DHARAMPUR

The museum was started in 1928 by the then Maharaja of Dharampur, Shri Vijaydevji Rana. The object was to stimulate cultural, educational and industrial activity for the benefit of the aboriginal people who form an overwhelming majority of this area. The museum therefore enjoys a singular position among the museums of India by virtue of the fact that it is primarily meant for the aboriginal peoples and it is situated in their own area. The museum which is regarded as the cultural out-post in South Gujarat is working under the Government of Gujarat.

The museum, having been thoroughly reorganised, has three main sections, viz. Anthropology, Industrial Art and Natural History. Research work in cultural Anthropology is being carried out by the Curator and tours are undertaken for the purpose in tribal areas. Others interested in research are given help and advice. Multi-purpose project and N. E. S. officers and staff are being advised in Tribal affairs.

Thousands of aboriginal peoples take advantage of the museum every year.

The museum is receiving development grants from the Central Government and it is proposed to turn this museum into a "Museum of Anthropology" with a Tribal Research Institute as a department of the museum.

II. UNIVERSITIES

MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

This University was founded in the year 1949, with Shrimati Hansabehn Mehta as its Vice-chancellor. It is a residential and teaching body restricted to an area covered within a radius of ten miles. The University has turned the former Colleges of Baroda into Faculties integrally linked up together and afterwards has created several other institutions, the need for which was felt in the new set-up. The University has also added a number of departments to the Faculties as it expanded some of the older ones.

Besides teaching, important research work is being done in all the Faculties and Departments. It has been steadily increasing and so far 78 theses on various subjects have been prepared for the Degree of Ph. D. The list of the Thesis accepted by the University is given in Appendix II.

I. Faculty of Arts

(1) **Department of Archaeology**—Research work in this Department has been completed in some cases and is in progress in the other cases in the field of Prehistoric and Early-historic Archaeology mainly in regions of Western India. This work is done by field explorations and vertical excavations at selected sites.

Explorations in (i) Lower Mahi Valley, (ii) Baroda, Broach and Surat Districts, (iii) in parts of North Gujarat, (v) in parts of Saurashtra, and (vi) in Bellary District have been completed and some of the results have been published.

The Department has also carried on explorations in Bihar, Orissa, Madhya Pradesh, Uttar Pradesh and the Punjab. Some of these explorations have been done with the Deccan College Post-Graduate Research Institute, Poona University, Utkal University and the Departments of Archaeology of the Government of India and Bombay State.

Explorations in (i) Tapti Valley, (ii) Bombay Area, (iii) Thana District, (iv) Satara District, (v) Banas-Kantha District, (vi) Mehsana District, and (vii) Areas in Saurashtra are in progress.

Vertical excavations have been conducted at Baroda, Timbarva, Variav, Langhanaj, Vadnagar, Somanatha, Amra, Lakhabaval, Navadatoli, Maheshwar and Bhuvaneshwar.

The department has contributed substantially to the field of archaeology

(2) **Department of Economics and Politics**—Research work in these departments have been done in the field of Demography and Studies of Population Problems. Work is done on various economic problems of underdeveloped countries. Work is also done on Banking, Rural Credit and Money-Lending

Problems, Five year Plan, etc. Several Ph. D. students are working on various problems.

The Socio-Economic Survey of Baroda City, a scheme sponsored by the Planning Commission is completed and the report has been submitted. A survey of Industrial conditions in Baroda city is nearing completion.

(3) Departments of English and other Languages—Research work is being done in various spheres of literature, poetry, drama, fiction. The research papers have been published and several Ph. D. students are working on various problems.

(4) Department of Gujarati—Research work has been done in the department in various fields of literature and a good number of research papers and articles have been published. Several students are working for Ph. D.

A scheme to edit a series of old Gujarati Texts has also been undertaken by the department and Shashti-Shatak Prakarana, Nala-Davadanti Rasa, Prachin Fagu Sangraha, Nalakhya, Varnak Samuchchaya etc. have already been published.

(5) Department of History—The important research schemes in progress in the department are (i) A scheme of Research in the Muslim History of Gujarat from 1200 to 1750 A. D., (ii) Records of Old Baroda Residency. Research work is on progress on (i) Political Relations of Baroda with the Central Government from 1875 to 1920, (ii) Baroda Administration under Sir T. Madhavrao, (iii) The Early Sultans of Gujarat, (iv) Modern Indian History, (v) Chronology of Gujarat, and (vi) Bhopal during the Mutiny. Some work has been prepared and published also.

(6) Department of Philosophy—Works on the Problem of Reality and Axiomatics, Valuational Theory of knowledge have been completed and published in the Gaekwad Oriental Series. A good number of research papers and articles prepared by Dr. A. G. Javadekar and Miss Divatia have been published. Research work in progress is Analysis of Language in Science, Literature and Philosophy.

(7) Department of Sanskrit—The Department had conducted a research project on the 'Interpretation and Translation of the Soma-Mandala (RV. IX)' and three volumes have been published on it. Dr. S. S. Bhawe is carrying on its further work under University Grants Commission Scheme.

The thesis on 'A critical Study of Shri Harsha's Naishadhiya-charitam' (by Dr. A. N. Jani) and on 'Kevaladvaita in Gujarati Poetry' (by Dr. Y. J. Tripathi) and a number of papers and articles have been published. The thesis on 'Cultural History from the Matsya Purana' (by Dr. S. G. Kantawala) is in the press.

At present 14 students are working for Ph. D. on (i) Bhakti Cult in the

Bhagavata, (ii) Shrikanthacharita-A study, (iii) Reconstruction of Sankha-likhita-Smriti, (iv) Sayanacharya's Bhasya on Rg. I, 1-25 with special reference to Paninian Grammar, (v) A Cultural Study of the Vamanapurana, (iv) A Cultural Study of Manasollasa, (vii) Bharavi-A Study, (viii) Shiva-Mahapurana-A Critical Study, (ix) Ideals of Social Life as depicted in Ramayana, (x) Shri gokulnathaji's contribution to Suddhadvaita Vedanta, (xi) A critical Study of Jayakhya Samhita, (xii) A Critical Study of Vishnu Purana, (xiii) Paninian Phonology, (xiv) An Approach to the Vaisvadeva Hymns in the R̥gveda.

(8) Department of Sociology—Research work in this department has been done in the fields of Social Systems, Social Anthropology, Special Intensive Studies of certain tribes and villages, Caste-system and study of High School-University students. A study of industrialization and urbanization in the Rural Areas of Southern Gujarat with special reference to Tensions between groups and classes has been completed. Research is in progress on (i) Social structure and change in a multi-caste Village in Gujarat, (ii) Social conditions obtaining in some koli villages in the Charotar Area after 1800 A. D., (iii) Nineteenth Century Gujarati Society from literary sources, (iv) The English-educated and the Society with reference to Gujarat between 1800 & 1900, (v) Factory workers in Baroda—A Sociological Study, (iv) Functional and Dysfunctional aspects of the working of C. D. P. in Gujarat, India.

II. The Oriental Institute

Baroda has been taking interest in Oriental researches since 1993 A. D., when Sri Manibhai Jasabhai, the then Dewan of Baroda State, had appointed for the purpose Shri Manilal Nabhubhai Dwivedi, the veteran scholar and writer of Gujarati and the latter put forth much work during his brief career.

Then, at the instance of Srīmant Maharaja Sayajirao III of Baroda, the Vitthala-Mandira library, the nice collection of Srīmant Sampatarao Gaekwad containing 630 volumes and the personal library of Sri Yajneswar Bhatt of Baroda consisting of 60 printed books and 446 manuscripts were merged together in order to set up a small Sanskrit Section in the well-known Central Library of Baroda. Thereafter 10,000 manuscripts were collected from different parts of the country by Sri Ananta Krishna Sastri, who was appointed for the purpose by the then Dewan, Sir Manubhai Mehta.

With a view to publish precious jewels from among the ancient manuscripts the Gaekwad's Oriental Series was started in 1915 A. D., with Sri Cīmanlal Dalal, the late young and spirited scholar of Gujarat, as its first general Editor.

The publication-activities having thus increased, this Sanskrit Section of the Central Library was shifted to the fire-proof building of the State Record Office in 1923 A. D. and four years after, i. e. in 1927 A. D. it was separated from the Central Library; and thus came into existence the Oriental Institute with its

own library of printed books as well as manuscripts, under the directorship of Dr. B. Bhattacharya.

The Translation Branch, started in 1917 A. D. with the noble intention of giving an idea of the progress in various sciences made by the different nations of world to the people at large, was annexed to this developing Institute in 1931 A. D. and since then it has become an important section of the Institute.

At the invitation of the Oriental Institute, the 7th Session of the All-India Oriental Conference was held in Baroda in 1933 A. D., the proceedings whereof were published two years later. This was indeed a credit to the city of Baroda.

The Maharaja Sayajirao University of Baroda having been established in 1949 A. D., this Research Institute came under the direct control of the University.

Prof. G. H. Bhatt of the Department of Sanskrit became the Director in 1951 A. D., who started the quarterly "Journal of the Oriental Institute" and the momentous project of preparing a critical and illustrated Edition of the Valmiki Ramayana.

The first fascicule of the Balakanda was published in January 1958, when the Institute shifted to its new building, and the second one in March 1960. Ayodhyakanda is also out recently.

Since April 1958 Prof. Bhatt has retired from Directorship and has been concentrating his energies on the Ramayana work, Dr. B. J. Sandesara, the Head of the Department of Gujarati of the University, succeeding him as the Director. Dr. Sandesara is himself a renowned scholar and researcher and with the co-operation of Dr. U. P. Shah, the Deputy Director and other learned colleagues, is enhancing the activities of the Institute with vigour.

About 140 works have been published in the world-famous Gaekwad's Oriental Series. More than 500 books in Gujarati, Marathi and Hindi, useful to different strata of the Society have been published in the Translation Branch publication Series viz, Sayaji Sahityamala, Sayaji Balajnanamala, Sayaji Gramvikasmala and Matushri Jamnabai Smarak Granthamala. The Journal has entered its tenth year in September 1960 and the M. S. University Oriental Series, being published in instalments in the Journal, has four publications.

Since 1931 A. D. Post-Graduate teaching also is going on in the Institute.

Dr. Sandesara having come here as the Director, the editorial and publication work of the Prachina Gurjara Granthamala as also of the works of the late Prof. B. K. Thakore has been transferred to the Oriental Institute from the Department of Gujarati, of which Dr. Sandesara is also the Head.

The library of the Institute consists of about 21,000 printed books on various subjects and about 140 Journals exchanged from all over the World for the Journal of the Oriental Institute. It works under the direct supervision of

Dr. C. P. Shukla, the University Librarian. Not only the local scholars and students but even those from distant places can get all possible facilities for utilising these materials.

The most valuable wealth of the Institute, however, is its fine collection of about 22,000 manuscripts written in Devnagari, Sharada, Newari, Bengali, Maithili, Udiya, Telugu, Grantha, Malayalm, Kannada, Sinhalese and Burmese scripts on paper, palm-leaves, birch-bark, aloe-wood and compressed cotton. A majority of them are written in sanskrit and Prakrit, but, manuscripts in such other languages as Gujarati, Marathi, Hindi, Punjabi, Tamil, Telugu, Assamese, Kannada, etc. are also found in this precious collection. Researches on and publication of these are in progress.

The Sangeet Nataka Academy of Delhi has granted Rs 10,000 for publication of important manuscripts on Music and four of these have already been brought out.

In January 1959 the Institute received a generous gift of about 9,000 manuscripts from Yatisri Hemchandrajī of the Chipawad Jain Upashraya, Baroda. Recently the Institute has acquired a good collection of manuscripts and different types of ancient writing materials including golden and silver inks.

Visitors to the city like to see the Institute and are filled with wonder and joy on observing ancient copper-plate-grants, and illustrated manuscripts of the Bhagawadgita, Sri Sanskaracarya's Saundaryalahari, etc. pictures of Ragas and Raginis, scenes from the Bhagavata-purana and several other specimens exhibited in show-cases.

This Research and Post-Graduate Institute of Baroda is one of the foremost such institutions in India.

III. Faculty of Science

There are eight branches in which instructions are given in the Faculty of Science Biochemistry, Botany, Chemistry, Geography, Geology, Mathematics, Statistics and Zoology. All the departments now do postgraduate teaching and research. The output of research work has been steadily increasing and so far 30 students have obtained the Ph. D. degree and about 400 papers have been published in Indian and foreign journals. A brief account of the lines on which research work is going on is given below :

(1) Department of Biochemistry

Citric acid metabolism : During the period of citric acid accumulation in citruts and garcinia fruits and mold namely *Aspergillus Niger*, the enzyme make up changes in a manner that favours both the formation and accumulation of citric acid. To elaborate, the increase in condensing enzyme activity during citric acid accumulation would result in an increased formation of citrate whereas

the concomitant increases found in the activities of pyruvic oxidase and oxalacetic carboxylase would ensure a supply of C_2 and C_4 precursors of citrate. Further, aconitase activity diminished to the vanishing point at the peak period of citric acid accumulation pointing to a block in the operation of the tricarboxylic acid cycle at the citrate level, resulting in the no-oxidation of citrate and its consequent accumulation. The initial presence of the two hydrolysing enzymes, oxalace hydrolase and acetyl CoA deacylase, and their subsequent disappearance during the peak period of citric acid accumulation, point to the possibility that an additional factor may be involved in the increased formation of citrate during the later stages, as the effect of the disappearance of these two enzymes would be to facilitate an increased supply of the respective precursors of citrate.

Metabolic studies are in progress regarding a strain of A-Niger to grow in medium containing citrate as the sole carbon source.

Biosynthesis of Carotenoids in Plants

Cell free extract of carrots and mangoes were found to utilise glucose, acetate and mevalonate for carotene synthesis. The former were found to require reduced ilutathione, ATP, DPNH, Mg^{++} and Mn^{++} and Co^{++}

Mevalonic acid, though proved to be the precursor of the carotenoids was never before shown to be present in the plant system. Successful attempts were made to isolate mevalonic acid from the carrots as well as from the mangoes. In mangoes the mevalonic acid content was found to increase progressively along with the process of ripening.

Two enzymes aceto-COA kinase and mevalonic kinase concerned with the biosynthetic pathway from acetate to carotene synthesis were detected from the carrots.

Studies on Human lactation

The aim of these investigations was to study the relation between dietary intake and milk composition with regard to fat, protein, essential amino acid and certain vitamins in lactating women. Studies were also made of changes in the milk composition of these constituents with the progress of lactation.

The protein, fat, amino acid and vitamin contents of milk were found to be related to dietary intake. Fat, protein and vitamin supplementation was found to have a beneficial effect of milk levels of the respective constituents. Early milk was found to be richer with regard to fat, protein and certain vitamins than late milk. The activities of lipase, esterase and alkaline phosphatase were found to decrease with the progress of lactation and to increase with fat, supplementation.

Tissue Culture Studies .

Studies carried out on the nutritional requirements of the heart fibroblasts of pigeon, chick and rat showed that the fibroblasts of pigeon and chick unlike rats did not require additional glutamine because of the presence of the enzyme glutamine synthetase.

The tissue culture technique was utilized to study the nutritional aspects of normal and malignant rat liver. The explants from the liver were cultivated in the synthetic medium and compared with those of normal liver. It was observed that the rate of glucose utilization by explants of hepatoma was very high whereas the cultures of normal liver were found to release glucose into the medium. This could be explained in terms of the differences in the enzymes of carbon-hydrate metabolism.

Successful attempts were made to cultivate the embryonic chick and rat tibiae in chemically defined medium. It was investigated by chemical analysis and by histological observation that calcification was setting up on second day and thereafter it was progressively increasing upto 8 days. Studies are under progress to elucidate the relation between vitamin D and calcification.

(2) Department of Botany .

Research work is being carried out in the following branches .

- (a) Embryology,
- (b) Anatomy,
- (c) Floristic and Ecological studies,
- (d) Cryptogams

Botanists have studied the vegetation and Flora of Bombay Presidency, (which includes the present State of Gujarat) and some information is available about the plants found growing in this region. But, adequate attention has not been paid to the Flora of Gujarat in particular. It has been touched only by the flying visits of well-known botanists and is inadequately represented.

The Botanical wealth of Gujarat is important and demands immediate and careful attention of the authorities concerned. Existing scanty works on the flora of this region, mainly give enumeration of the plants met with without even considering the economic aspect of the problem. A comprehensive Flora of Gujarat with intention of recording the availability and abundance of the economically important plants is certainly worthwhile. This is also likely to bring to light plants hitherto not recorded or new to science. The Botany Department has undertaken this work.

(3) Department of Chemistry :

The Chemistry of Coumarins has assumed interest in recent years because

they have been found to be of therapeutic nature. The chemistry of Coumarins, Chromones and Flavones is being studied in detail. Synthesis of bromo, iodo, cyano and chloromethyl derivatives and Mannich bases of Coumarins, Chromones and Flavones have been synthesised and the pattern of substitution studied. Some 8-Phenyl coumarins, Furo coumarins, Coumarino pyrones, dicoumaryls and diflavonyls have also been synthesised. Further, 3-hydroxy and 4-hydroxycoumarins which are substances of potential therapeutic value have been prepared. Some of the Mannich bases prepared are being tested for their central nervous system stimulating effects.

1 and 2-anthrol have been subjected to various reactions and anthra-alfa and gama-pyrones and anthrafurans derivatives synthesised. Some of these have been oxidised to the corresponding anthraquinone derivatives.

Cyanacet arylamides have been partially hydrolysed by (a) polyphosphoric acid and (b) sulphuric acid to the corresponding malon mono arylamides. A number of 2,4-quinolinediols have been synthesised by the cyclisation of malon monoarlic acids and malon monoarylamides. A number of methylene bis (acetoacet arylamides) have been formed from acetoacet arylamides by means of sodium hydroxy methane sulphonate; and the derivatives of 3,3'-methylene bis-(4-quinolines) as well as of 3,3'-diquinolyls have been synthesised.

The oximes of substituted acetoacet (aryl) amides have been synthesised; some of these are found to be good analytical reagents. The absorption spectra and magnetic susceptibility of the oximes and their metal chelates are studied.

A number of compounds which should exhibit mesomorphism are prepared. Their liquid crystalline property is being examined from the standpoint of molecular structure, either individually or in their mixtures with a liquid crystalline substance (mixed liquid crystals) by studying the effect of structure on mesomorphic transition temperature. The liquid crystalline behaviour is investigated by thermal and optical methods.

(4) Department of Geography

The research work done in this department is with a view to grasp the changing patterns on the surface of the earth (or any part of it) as a result of the combination of all kinds of things, physical, biotic and human, in all kinds of combinations. Areal associations and time sequence are the twin dimensions with which to see our world. The idea that man is controlled by his physical environment is now replaced by the idea that man has a significant role in shaping his environment. The significance to man of the physical features of the earth is the function of the attitudes, objectives and technical skills of man himself. The physical and biotic environment has different meaning to people of different cultures at different times and at different stages of technical development. The personality of a region is the result of the integration of the

physical, human and biotic factors seen through time. This integrated view used by geographers helps in understanding the problem of any region which in turn is the basis for future planning. When the World is accepted as a changing phenomena no plan can have any rigidity. All planning regions must be treated as functional, to achieve certain maximum results. This concept of Geography is invaluable in planning. Certain settlements and regions have been studied using the Geographic concept and method

(5) Department of Zoology

During the past twelve years this department has made rapid progress and the research work carried out has received International recognition. The Department trains students in the following branches :

- (1) of Comparative Anatomy and Embryology,
- (2) of Animal Physiology and Histochemistry,
- (3) of Avian Biology and
- (4) of Entomology

The research work carried out comprise the above fields and some of the major problems studied have been the following

1. How does a turtle, an animal whose body consists of an immovable hard outer shell able to breath ?
2. What is the source of energy for animals like birds, bats and insects for flying thousands of miles at a stretch ?
3. What is the source of energy for organs like the heart, and the diaphragm to work continuously for long periods of time ?
4. What is the chemical mechanism by which such enormous energy is made available and used ?

The research in the department has contributed substantially in understanding these problems and the several publications on the findings speak for themselves.

From the department is also published a research journal "The Journal of Animal Morphology and Physiology" which has an International circulation. Another research journal "PAVO" The Indian journal of Ornithology is expected to be published early 1963.

(6) Department of Physics :

Microtopographical studies :

In the Physics Department of the M. S. University of Baroda, research work on microtopographical studies of surfaces of mineral and metal crystals (natural and synthetic) prepared by several methods is undertaken with a view to study-

ing the part played by imperfections particularly dislocations in the growth and etching of single crystals which are required in different types of physical appliances. A study of microhardness along grain boundaries in polycrystalline material is also undertaken. A few research papers are also published on the above work. Adequate facilities are available in the laboratory for the above work.

It is proposed to take up the study of domain patterns on ferroelectric and ferromagnetic crystals and of thin films and their physical properties. These studies will be supplemented with the help of X-ray unit recently arrived in the department.

Luminescence

The investigation of the properties resulting from the introduction of foreign ions into solids has proved to be a powerful means of obtaining information about some aspects of the Solid State. Some of the most striking effects brought about in solids by the addition of impurities are those of luminescence and allied optical phenomena.

Work in the field of luminescence is undertaken in this University with a view to identify the luminescent centres in the impurity activated inorganic phosphors and to study the electronic transitions and the rearrangements occurring during luminescence.

Measurements include the study of excitation emission phosphorescence decay rates, thermoluminescence and photoconductivity. All the measurements are made photoelectrically for which the laboratory is adequately equipped.

Heat Transfer

The work in the field of Heat Transfer was undertaken in this department.

The main interest in this field was in study of (i) influence of ionic currents on the rate of heat-transfer. (ii) Heat transfer and Reynolds number and (iii) Heat-transfer and loss by forced convection.

Measurement of Viscosity

Viscosities of Highly viscous liquids have been determined by a simple apparatus designed in our laboratory.

(7) Department of Statistics:

(1) Statistical Summaries of Medical Examination Reports of students of M. S. University of Baroda have been prepared periodically and four booklets have been published during the period 1951 to 1961, giving incidence of various diseases, distributions of various physical measurements etc. Variations in distributions of age, height, weight etc. have been studied.

(2) Work on measurement of Wastage and Stagnation in M. S. University of

Baroda has been undertaken. One book is already published and the second one will be shortly published. The Wastage and Stagnation in the University due to failures and other causes are statistically measured and conclusions have been drawn.

(3) Concepts of latent normal correlation has been evolved and method of obtaining it is obtained. A method of estimating a quantile from data is obtained. Work has also been done in the field of Matrix Algebra and its applications in Statistics.

(4) Survey of health, economic and nutrition condition in families of secondary teachers of Baroda was done. Survey of industries in Baroda was also done.

(5) Considerable amount of work on various problems in Multivariate Analysis e. g. Computational Procedure for generalised R or U, conditions for the forms of the type XAX' to be distributed independently or to obey Wishart distribution, Equality of parameters in K-rectangular populations, Power-series distributions, etc has been done and published.

(6) Work has also been done on fitting curves and non-linear regressions e. g. Least Square Estimates of the parameters of Makeham's Curve, Logistic Curve, etc.

(7) Distribution of a definite quadratic form for Non-Central normal variates has been obtained.

IV. Faculty of Education and Psychology :

Faculty of Education and Psychology is one of the senior institutions in the field of research in education, educational administration, and psychology. Its research programme is associated with the degrees like M. A., M. Ed. and Ph. D. both in education and psychology. For all these degrees, a dissertation is compulsory and that has helped us to investigate several problems of practical utility. (List of titles of dissertations and thesis is available).

Moreover, Faculty has undertaken research projects financed by the University, Ministry of Education and Indian Council of Medical Research.

The Research Unit is engaged in programmes of research in various fields. The first is the project of constructing tools for educational and vocational guidance. These tools include construction and standardization of tests of intelligence, aptitude, interest and collection of data on occupational information. All psychological tests are prepared in Gujarati and are standardized for Gujarati-speaking pupils. The tests are meant to be used as guidance tools in secondary schools of Gujarat. The work has been in progress for the last six years and the following items have been completed (1) The University Entrance Test; (2) The Clerical Aptitude Test, (3) The Group Test of Intelligence, (4) The Mechanical Aptitude Test; (5) Norms for the Minnesota Manual Dexterity Test; (6)

Norms for the Minnesota Paper Form Board Test, (7) Norms for the two performance tests-Koh's Block Design Test and Pass-along Test; (8) The preparation of description of jobs in textiles and chemical industries in Baroda; (9) A functional cumulative record card for vocational guidance; (10) Job Analysis-A Report; and (11) Jobs in a Pharmaceutical Concern.

The second programme is the project on Achievement Tests. The main object of the project is the construction and standardization of achievements tests for different classes and in different subjects in Gujarat. These tests are based on syllabuses prescribed by the State Department of Education.

They are constructed by using the most modern techniques of evaluation and hence can be relied on for objective assessment. So far achievement tests in History, Geography, English, Gujarati, Arithmetic, Algebra, Geometry, and General Science for classes VIII, IX and X have been constructed and standardized. These two projects are being financed by the Ministry of Education, Government of India under B-(2) scheme of the Second Five-Year Plan.

The third project is on "Psychological Factors Related to Adolescent Adjustment" and is being financed by the All-India Council of Medical Research. The work has been in progress for the last four years and all the basic instruments for assessing personality adjustment of adolescents (Gujarati speaking population) have so far been constructed and standardized. The study is completed.

The Faculty has published several research monographs.

V. Faculty of Commerce

Research work has been completed in some cases and is in progress in the other cases in the Faculty of Commerce in the fields of Economics, Planning, Monetary Theory, Income Tax, Agrarian Problems in Saurashtra, Cottage Industries in Gujarat, Insurance, Taxation and Economic Development, Fiscal Theory, Rural Economy, etc. The Faculty is conducting a Survey 'Inquiry into Rural Income and Savings in Gujarat' sponsored by Planning Commission of Govt. of India. Another survey "An Enquiry into Rural Incomes and Savings" is in progress. Research work on Capital Formation, Banking and Wastage in Industries is in progress.

VI. Faculty of Medicine

The research work to be undertaken in different departments of the Faculty of Medicine comprises of —

- (1) *Physiology* :—Nutrition; Effect of Cooking; Metabolic Studies; Gestic Function; Muscular efficiencies; Reaction time etc.
- (2) *Anatomy* :— Ossification of Bones etc.
- (3) *Pharmacology*.—Various Drugs, Particularly Ganglion Blocking Agents; Glucose metabolism; Diuretics,

- (4) *Pathology* -Studies in Serum Collestro; Parasitis; Pathological Abnormalities etc.
- (5) *Prev. & Soc. Med* -Epedimiology of Syphilis; Blindness; Health Problems etc.
- (6) *Medicine* -Clinical trials with drugs, C-Reactive Proteins etc.
- (7) *Surgery* -Operation Methods (Cardiac); Studies in Sutures etc.
- (8) *Obst. & Gyn.*-Studies of Rupture Uterus; Incidence of Diseases etc.
- (9) *Prediatrics* -Incidence of Various diseases, particularly to the region.
- (10) *Skin/V. D.*-Anti-Biotics and V. D., Skin Expheiative Agents;
- (11) *E. N. T.* -Studies in Oediometry and newer techniques.

Sheth Ujamshi Pitambardas Ayurvedic Research Unit

It is located in the Faculty of Medicine and devoted entirely to research work on problems of Ayurveda, e. g. (a) Collation of literary Material on several diseases and Ayurvedic Theories, Prakrities, etc., (b) Inquiry into Physiological Basis of Ayurvedic Prakriticlassifications in collaboration with other departments, (c) Researches in Bhasmas and Ayurvedic Remedies. Several kinds of Bhasmas have already been prepared and notes on anomaly during the processing have been published. Papers on Shankhpushpi, Rog, Malkangani, Bilwapatra, Madhunashini, concept of Rasa and its actions, Gastric functions, Grahani Rog, Vaman Therapy, etc. also have been published.

VII. Faculty of Social Work

The Faculty of Social Work is primarily an academic institution, preparing students for professional career in social work field. This is a post-graduate institute offering a two year course leading to the Degree of Master of Social Work. The training programme consists of theory courses, field instructions and participation in research experience. All the students, enrolled in the Faculty for their professional training, are expected to undertake a research project as a part of their academic requirement.

In addition, to the programme of students research projects the Faculty, from time to time, has sponsored research projects, of wider coverage.

The Faculty has so far sponsored the following research projects :-

1. "Survey of Social Work Education in India-
As preparation for work in the field"(Published in 1961)
2. "Problems of working mother in Baroda City" (Publication under consideration)
3. "A Study of the Mental Illness as Reflected in the
cases closed between July 1958 to March 1960 in
the Mental Hygiene and Psychiatric Clinic" ..(Baroda) ...(On hand)

4. "A Study of the conflicts of the Young Adult Students (those enrolled for pre-University Courses) in relation to Parental Norms and the Behavioural Manifestations of these".
5. "A Follow-up study of the services of the Mental Hygiene and Psychiatric Clinic, Baroda".

(These two projects are proposed under International Research Programme, Social Service Administration, U. S. A.)

VIII. Faculty of Technology and Engineering

Research work is being done in the Department of Applied Mechanics, Electrical Engineering, Civil Engineering, Mechanical Engineering, Textile Engineering and Geology. A Picker Testing Machine has been already designed and prepared which will enable the textile engineers to find out the qualities of commercial pickers. A cotton cleaning machine is being designed which will clean the cotton easily at ginning stage, reducing thereby the quantity of waste. A machine, Ring Travellers, is being manufactured to produce ring travellers required on the ring frames commercially. Research project in progress are as follows :-

(1) Swetting Pressure in Expansive Soils —

A new theory on the "Swelling of Clays" has been propounded. Data is evaluated from the apparatus M. S. U. S. M. A. designed which is installed in the Faculty. The data is fed into the implicit equation comprising of void ratio, & expansion parameter L , Compression parameter B and swelling index C_s to get absolute swelling pressures. The concept, the principle and method has been explained in the booklet "A theory for Swelling of Clays" presented at Central Board of Irrigation and Power. The absolute swelling pressure of the sample resorted is 6.25 T/Sq. ft. The tests for the other samples at different densities are in progress

(2) Expansive Soil Research Project in collaboration with Engg. Research Institute, Gujarat State:—

Based on the index properties of Narmada Command Soil, a new line $PI=0.57 (LL-8)$ called E-line has been established. It has flatter slope & lesser intercept than A-line in Cassagrande Plasticity Chart, and intersects it at the point LL_{60} and $PI_{28.5}$ at an angle of 60. This line marks the region encompassing the expansive clays which commence from the point of intersection B.

The criteria for the remedial measures for the Structures on expansive soils is being worked out.

A note has been prepared for the design of canals from the soil stability point of view.

A set of curves are drawn for checking the hydraulic design from the soil stability consideration.

(3) Study of properties of road stone, aggregates of Gujarat area:—

Several samples of various quarries of Baroda, Banaskantha, Panchmahals & Districts of Saurashtra were obtained. Various tests were conducted and the results obtained are contained in a research thesis of the post-Graduate students of the Faculty. It is proposed to obtain further samples of other quarries of the various districts.

(4) Public Health Eng-Biochemical & Technological studies on Sewage Disposal —

Carrying out studies on the possibilities of the use of mixed culture of Algae & Protozoa for sewage purification making basic studies of the fundamental principles affecting the problems under study.

(5) Investigation of factors of stress concentration in bars with sharp grooves & fillets in tension photo-elastically:—

The photo-elasticity bench is completed, but since other testing equipments were not available for the reason of import licences, the further testing of samples was not possible. Now the part of the equipment has been recently obtained and work is in progress

(6) Structural investigation of High grade metamorphic rocks —

The scheme was started in Aug. 1960 The problem mainly involves geological field work Originally the investigator hoped to find suitable areas in the neighbourhood of Baroda, but found that exposures of suitable rocks generally do not occur in Guj. State. Surveyed and mapped rocks of (1) Ranikhet area in Himalayas, (2) Pallavaram area near Madras Geological maps of the areas have been prepared which contain all the petrological & structural details. The rock specimens collected from those areas, are being analysed in the Laboratory. In coming few months a systematic account of the Petrography and Structure will thus be available.

(7) Magnetic Amplifier circuit:—A modification of the subject has been suggested and the work is to be started on approval.

(8) Conductivity measurements of Textile Fibres by capacitance charge method and evaluation of effects of different artistic agents on the electrification of fibres are to be started.

(9) In Textile Engineering Department Heald Testing Machine and Attachments to carding Engine are nearing completion. Other projects of Tatro Ring Spinning, Tatro Picker Testing, Tatro Heald Testing, Cotton Cleaning, Sliver

Making, Tauro Tape Sizing Machine, Mac-bine for removing rest yarn from bobbins are in progress.

THESIS

The list of theses for the degree of Ph. D. already approved by the M.S. University of Baroda is given in the Appendix II.

GUJARAT UNIVERSITY, AHMEDABAD

The Gujarat University was founded in 1949 and started functioning in 1950 as an affiliating and teaching university. The number of Colleges and Post-graduate Institutions affiliated to and recognised by the University are at present 72 and 7 respectively.

The post-graduate teaching is conducted by recognised institutions and some affiliated colleges. The total number of post-graduate centres instituted in various colleges and institutions is 81 with the total number of 3272 students on the roll. For this purpose the University has also started the following departments.—

(1) School of Social Studies imparting instruction in Economics, Political Science, Sociology, Statistics and Labour Welfare, (2) School of Gujarati Language and Literature imparting instruction in Gujarati, (3) School of Psychology and Psychology imparting instructions in Psychology including Experimental Psychology, and (4) School of Sciences imparting instruction in Physics, Chemistry, Botany and Mathematics.

It is envisaged during Third Five Year Plan period to include the following departments in the School of Gujarati Language and Literature:—

- (1) The Department of English,
- (2) The Department of Sanskrit,
- (3) The Department of Persian and Arabic,
- (4) The Department of Hindi.

These departments are guiding students for Ph. D. Research work is also being done in all of them. At present the Department of Mathematics conducts research in (i) Gravitational Waves, (ii) General Relativity, (iii) Cosmological Models, (iv) Unified Field Theories, and (v) Magneto Hydrodynamics.

In the School of Gujarati Language and Literature a Survey of Katchhi Dialect has been completed.

In the school of Philosophy and Psychology seven students are working for Ph. D. on the following subjects—(1) Psychological and cultural factors affecting productivity, (2) A comparative study in the projective and sociometric approaches to personality, (3) The Cromingen School of characterology and its bearing on education, character type, intelligence and academic results,

(4) Psychological adjustment in intercaste marriages, (5) Norms and occupational aptitudes of Gujarat University post-graduate students, (6) Industrial morale in selected Industry, (7) Development of social attitude scales.

Research work is also carried on at other post-graduate centres, as a result of which about 80 theses for the degree of Ph. D. on various subjects have been approved upto now. A complete list is given in Appendix III.

The University has also contributed a great deal in the field of research by giving grants to various College and University teachers for research work in various subjects. Upto now the University has sanctioned 129 grants amounting to about Rs. 8,000. Many of these research works have been published.

The University has so far published 29 publications and 9 are in the press.

The University also publishes a journal named 'Vidya' containing research articles from University and College teachers.

SARDAR VALLABHBHAI VIDYAPEETH, VALLABH VIDYANAGAR

Sardar Vallabhbhai Vidyapeeth, a residential university, was established in the year 1958. It has now 11 post-graduate departments.

I. Department of Botany :

Three research papers have been published and the study of the flora of Charotar has been taken up by the Department.

II. Department of Physics :

14 research papers have been prepared and published by the Department. It also conducts investigations in the nature and the types of dislocations in the crystals.

III. Department of History :

A number of research papers have been prepared and published by the Department. It also carries on the study on (i) the evolution of the Indian Mythology, and (ii) fixing the time of ancient texts and monuments in the light of their mythology content.

A thesis for Ph. D. prepared in the department on "The Political, Economic and Social conditions of Northern India during the first half of the century A. D." has been recently submitted. The thesis on 'Marathas in Rajputana' is under preparation.

IV. Department of Philosophy :

A few research papers have been published by the Department.

V. Department of Sanskrit :

A number of research papers have been prepared and published by the Department. The following is the approved thesis for Ph. D. prepared in the Department :-

1. Kalidasa's Philosophy of Nature—Miss Padma Fadja.

VI. Department of Gujarati

The following theses for Ph. D. are under preparation :-

1. Khabardar—A Study
2. Poetry of the Poets of Swaminarayan Cult
3. The Comic Plays in Gujarati

The work of editing the following manuscripts is in progress —

1. Aranyaka Parva by Vishnudas
2. Shreepal-charitra · Siddhachakra Rasa by Jnanasundar
3. Sabha-parva by Shedhaji
4. Svargarohini by Sura Bhatta
5. Vetāl-pachisi by Anupasimh

A number of articles have been also published by the Department.

VII. Department of Mathematics :

A few research papers have been published by the Department.

VIII. Department of Hindi :

The work of editing 'Vihari Satsai' is in progress. The following theses for Ph. D. are under preparation —

1. Bisvi Sadi-me Hindi-me Yatra-Sahitya
2. Hindi-me Rukmini Sambandhi Kavya
3. Kshemendra-ka Auchitya Siddhant aur Hindi Kavita
4. Hindi-ki Prayogshil Kavita aur usake prerana-srota
5. Hindi-Gujarati Rashtriya Kavita Tulanatmak Adhyayan (1920-47)
6. Hindi-Gujarati Geeti Kavyaka Tulanatmak Adhyayan
7. Swaminarayana Sampradaya-ka Hindi Sahitya
8. Hindi Sahitya-ko Koormachal-ki Den
9. Gujarat-ke Hindi Kavi Dayaram
10. Gujarat aur Rajasthan-ke Madhyakalin Santa Kavi
11. Seth Govinddas : Kala evam Kritis

12. Hindi-ki Gadya Lekhikayen
13. Gujarati-Hindi-ka Ramkavya-ka Tulanatmak Adhyayan
14. Pant-ke Kavya-me Saundarya aur Darshan
15. Kamayani-ka Manovaijnanik Adhyayan

IX. Department of Economics :

At the beginning of 1959 the Socio-Economic survey of village Valasan was undertaken by the Department. The report has been already prepared and published.

At the beginning of 1961 the Socio-Economic survey of village Mogri was undertaken. The report is in the final stage.

At present 5 students are working for Ph. D.

A good number of articles and research papers have been published by the department

The following is the notable research publication -

- 1 Investment in Agriculture in two Plans, by Dr. V. S. Vyas of the Deptt.

X. Department of Political Science and XI. Department of Commerce:

Uptil now no research work has been done in these departments.

UNIVERSITY OF BOMBAY, BOMBAY

The University of Bombay, founded in 1857, is one of the oldest Universities of India. It has now 41 affiliated colleges, viz Arts and Science Colleges 18, Science College 1, Commerce Colleges 6, Teachers Training Colleges 2, College of Engineering and Textiles 1, Law Colleges 4, Medical, Dental and Nursing Colleges 6, Veterinary College 1, College for Dip Pharm. Course 1, College of Architecture 1. The number of the Post-graduate Institutions recognized by the University is 14. The University has also established 8 departments, viz. (1) Department of Economics, (2) Department of Chemical Technology, (3) Department of Civics & Politics, (4) Department of Applied Psychology, (5) Department of Sociology, (6) Department of Law, (8) Bombay University Library.

I. Department of Economics :

This Department was established in 1921 and till June 1956 it was a part of the School of Economics and Sociology. It is eminent for post-graduate teaching and research in Economics.

The Department has at present five sections, viz. General Economics, Agricultural Economics, Monetary Economics, Business Management, and Demography.

The following are some of the research projects completed (or in progress) by the Department —

(i) *General Section*

1. An Enquiry into the Effects of Inflation and Price control on Middle Class Families in Bombây City (published by Padma Publishers, Bombay, 1945)
2. Effects of Partition on Industrial Structure of the Country (published by Vora & Co., in 1950)
3. Economic Survey of Saurashtra (The report was published in 1953.)
4. An Enquiry into the conditions of Refugees in Bombay (published in the issue of the Bombay University Journal, January, 1952)
5. Teaching of Economics in India (published by UNESCO)
6. The UNESCO Study in Group Tensions (The report has been already submitted to the UNESCO.)
7. An Enquiry into Social Tensions (The results of these studies were submitted in 1953 to the Ministry of Education, Govt. of India.)
8. Economic Survey of greater Bombay (Some reports will be published soon in the University Economics Series)
9. An Enquiry into Shops and Commerical Establishments of Bombay City (The report of the enquiry has been published in the University Journal.)
10. Studies in Capital Structure (published in the Indian Economic Journal October, 1954)

11. Research work done on behalf of the Planning Commission. Prof. C. N. Vakil and Dr. D. T. Lakdawala were appointed members of the Panel of Economists by the Planning Commission to render advice regarding the formation of the second Five Year Plan. In this connection, the members of the Economics Department were requested to prepare a number of papers on different aspects of planning. The following papers were submitted to the Panel of Economists in 1955 and were discussed at the meeting of the Panel —

1. Indian Industry's Installed Capacity and Present Production Levels (by Prof. C. N. Vakil), 2. Investment Pattern in the Second Five Year Plan (by Prof. C. N. Vakil and Dr. P. R. Brahmananda), 3. Institutional Implications of a Bolder Plan (by Prof. C. N. Vakil and Dr. P. R. Brahmananda), 4. Expansion of Tax Revenues (by Dr. D. T. Lakdawala), 5. Internal States Trading in Commodities particularly as an alternative to additional Taxation (by Dr. D. T. Lakdawala), 6. The public and the private sectors (by Dr. B. V. Krishnamurthy), 7. Institutional Implications of a Bolder Plan-Agriculture (by Dr. M. B. Desai), 8. Rehabilitation of Disadvantaged Class (by Dr. C. H. Shah), 9. Captial-Output Ratio in Economic Planning (by Dr. P. R. Brahmananda)

12. An Enquiry into small and Medium Scale Engineering Units in Bombay City (The results are published in the Bombay University Journal, January, 1958.)
13. An Enquiry into Small and Medium Scale Units in Basic Metal Industry in Bombay City (The results have been published in the Bombay University Journal, July, 1959.)
14. Sensitivity of Central Taxes 1948-49 to 1955-56 (The results of the study have been published in the Economics Weekly dated Dec. 5 and Dec. 12, 1959)
15. The Port of Bombay (A preliminary study has been published in the Bombay University Journal.)
16. "Boom in the Stock Market" (The preliminary results will soon be announced.)

(i) *Agricultural Economics Section*

1. An Enquiry into the Working of the Growth of the Food Crops Act (published by Vora & Co., Bombay, 1947)
2. An Enquiry to ascertain the nature of information contained in Government's Land Records in Gujarat (published in the Journal of the Indian Society of Agricultural Economics, August, 1949)
3. An Enquiry into the Method of Co-operative Farming in Maharashtra (published by the Provincial Co-operative Institute, Bombay, 1948)
4. A Study of the Economic and Social Conditions of the Halis (A report was submitted to the Govt. of Bombay in 1948)
5. An Enquiry into the Economic and Social Conditions of Agricultural Labourers in Gujarat, 1947-48 (The results have been published in the Indian Journal of Agricultural Economics, August, 1951.)
6. An Enquiry into the Resources of Cultivators of Uneconomic Holdings in Maharashtra (The results have been published in the Indian Journal of Agricultural Economics, August, 1949.)
7. A Socio-Economic Survey of Prohibition in Rural Areas (A report has been published by the Govt. of Bombay in 1953.)
8. An Enquiry into the Obstacles to grow More Food (published in the Journal of the Indian Society of Agricultural Economics, August, 1950.)
9. An Enquiry into the Working of the Bombay Agricultural Produce Markets Act (The report has been published by the Govt. of Bombay in 1951.)
10. A Study of Factors which impede the Progress of Low-income Farmers and the Role of Co-operative Movement in their Rehabilitation (The report will be shortly published by the Indian Society of Agricultural Economics.)
11. Economic Impact of Merger of States with British Gujarat (The

results have been published in the Journal of Gujarat Research Society, Vol. XIV, No. 37.)

12. An Analysis of the Response of Farmers in different size-groups in their Crop-pattern changes to the Price Variations (The results have been published in the Indian Journal of Agricultural Economics, Vol. XI, No. 2.)

13. Importance of the Community Development Projects in a Selected Region (The report has been published in the Journal of the University of Bombay, June, 1958.)

14. A Survey of Non-Farm Employment in Thana District. (The report was submitted to the Indian Council of Agricultural Research, Govt. of India, New Delhi in 1958.)

15. Impact of Irrigation on Land Utilization and Investment in Agriculture (The report is being prepared)

16. F. A. O. Research Project on Fisheries Economics (The report was published by the Food and Agriculture Organization in 1960)

17. A Survey of Drink Habit and Socio-Economic Conditions in Vidarbha and Maharashtra. (The report was submitted to the Govt. of Maharashtra in 1960.)

18. Research Project on Rural Unemployment (The field-work is in progress in Gujarat region).

(iii) Section in Monetary Economics

Besides delivering lectures and conducting seminars, Prof. Bruton gave a series of three public lectures on Inflation which have been approved for publication by the University. Prof. Whitlesey's book on 'Lectures on Monetary Management' has been published by the Bombay University. Dr. Doodha has undertaken a special study for investigating "The Boom in the Stock Market;" and the initial tabulation in this connection has already been completed. Mr. Gulab Thakur in association with Dr. Brahmananda conducted a study on "Factors determining Income Velocity" whereas Mr. M. S. Joshi is examining the theoretical and practical aspects of "Development of Banks in India".

(iv) Publications

The following are the research publications by the (post and present) members of the staff :-

1. Prof. C. N. Vakil - (1) The Future of the Rupee, (2) Our Sterling Balances, (3) Economic Consequences of the Partition, (4) Economic Crisis, Rising prices and Falling production, (5) Economic Consequences of Divided India, (6) Planning for a Shortage Economy, (7) Economics of Electricity Planning, with special reference to Electricity Cut in Bombay, (8) Economic Survey of Saurashtra, (9) Report on the Study of the Socio-Economic Effects of Prohibition (Rural).

(10) Saurashtra Cotton Textile Mills Enquiry, (11) Planning for an Expanding Economy

Dr. M. B. Desai (1) Food groups of Gujarat, (2) The Rural Economy of Gujarat, (3) Report on the Hari Labour Inquiry, (4) Economic Survey of Saurashtra, (5) Report on an Enquiry into the working of the Bombay Tenancy and Agricultural Amendments Act, 1948 in Gujarat

3 Dr. N. A. Majumdar (1) Some Problems of Underemployment

4. Dr. H. Ezekiel (1) Social Accounting and National Income Calculations

5. Prof M. L. Dantwala (1) Our Standard of Living, (2) Food Groups of Gujarat, (3) Report of the Congress Agrarian Reforms Committee, (4) Indian Agriculture, (5) Report of the Hari Labour Inquiry, (6) A hundred years of Indian Cotton, (7) Report of the Enquiry into Regulated Markets in the Bombay State

6. Dr. D. T. Lakdawala (1) Price Control and Food Supply, with special reference to Bombay City, (2) War and the Middle class, (3) Price Control in India with special reference to Food supply, (4) Justice in Taxation in India, with special reference to British India, (5) International Aspects of Indian Economic Development, (6) Economic Survey of Saurashtra, with Prof. C. N. Vakil and M. B. Desai, (7) Taxation and the Plan, (8) Report on small scale Industries in Bombay City, (9) Report of the Economic Survey of greater Bombay

7. Dr. P. R. Brahmananda (1) Planning for a Shortage Economy, (2) Economics of Electricity Planning with special reference to Electricity Cut in Bombay, (3) Planning for an Expanding Economy, (4) Studies in the Economics of Welfare Maximization

8 Dr. C. H. Shah (1) Problems of Small Farmer, (2) Co-operative Farming in Gujarat, (3) Conditions for Economic Progress of Farmers

9 Shri A. S. Deshpande : (1) Factory Management and Business Organisation

10 Dr. P. A. Nair Regional Economic Planning

11 Dr. V. S. D'souza : (1) The Navayats of Kanara, (2) Dandeli : The Growth of Our Industrial Village

12. Dr Kersi Doodha : (1) Analytical Study of Value Theory, (2) Economics of Instalment Credit, (3) Monetary Policy of the Reserve Bank of India

13. Shri K. S. Gnansekharan (1) Population Growth and Economic Development of Thailand

14. Students : (1) Imperfect Competition in International Trade-Rangnekar S. B. (2) Pricing in a Planned Economy-Krishnamurthy B. V. (3) Life and Labour in a Gujarat Taluka-Shukla J. B. (4) Indian Agricultural Economics-Patel A. D. (5) Agrarian Problems of the Madras Province-Sayanna V. V. (6) Problems of Monetary Policy in a Developing Economy-Khatkhate D. R. (7)

Indian Capital Market-Cirvante V. R. (8) The Co-operative Movement in the Bombay State-Naik K. N. (9) Trade Unionism in India-Punekar S. D. (10) Industrial Relations and Personnel Problems-Zechariah K. A. (11) Conciliation and Arbitration of Industrial disputes in India-Miss Shroff A. D. (12) System of Financial Administration in India-Pinto P. J. J. (13) Municipal Finance in Certain Indian Leading States-Bhouraskar K. M. (14) Social Insurance for Industrial Workers in India-Punekar S. D. (15) Textile Industries in Jammu and Kashmir-Ganju M. (16) The Indian Cotton Textile Industry. an Economic Analysis-Mehta S. D. (17) Some Industrial Problems with special reference to Travancore Cochin-Peter P. C.

(v) List of Approved Ph. D. Theses prepared in the Department

Rural Economy of Gujarat-Desai M. B.

Land System of Madras Province-Sayana V. V.

Farm Ownership and Tenancy with special reference to Thana District-Hate M. V.

Agricultural Tenancy in Gujarat-Barmeda J. N.

Rural Labour in Konkan-Donde W. B.

Co-operative Movement in Bombay-Naik K. N.

Effects for War on Agriculture in India with special reference to Gujarat-Shah C. H.

Rural Class Structure in India with special reference to Gujarat-Shah S. M.

Agricultural Labour in Bombay-Karnatak-Mavinkurve B. S.

The Impact of Urbanization on Rural Economy-Gouri G. S.

Agrarian Reforms in Bombay State-Shivamargi H. B.

The Problems of Marketing of Farm Products in Maharashtra-Madalgı S. S.

Some Problems of Underemployment-Majumdar N. A.

Agriculture in a Developing Economy with special reference to India-Vyas V. S.

Foreign Trade of India in Agricultural Commodities-Smt. Rai S. B.

Exchange Banks in India-Pardiwala J. J.

Indian Capital Market-Cirvante V. R.

The Problem of Foreign Capital-Sundaram J. D.

Monetary Policy and Economic Development of Under-developed Areas-Khatkhate D. R.

Recent Trends in Central Banking Policy-Nayak R. G.

The Role of Banking in India's Industrial Department-Pattanshetti C. C.

- Investment Pattern in Developing Economics—Medhora P. B.
- A Study in General Selective Credit Control with special reference to India—Abadian B. K.
- The Problem of Capital Formation—Bhatt H. C.
- Pattern of Corporate Savings and Investment in India—Miss Shah K. C.
- Indian Money Market—Shah C. K.
- The Economics of Instalment Credit—Doodha K. D.
- A Study in population Cochin—Verma Rama
- Economic Effects of British Impact in India during 1857–1950—Miss Nayampalli K. S.
- Economic Development of Kenya—Raghav Rao G.
- An Enquiry into the nature of under-development—An Essay on Economic Growth—Hazari R. K.
- Economic Conditions in Sind—Chabiani S. P.
- Wealth of Gujarat—Trivedi A. B.
- Industrial Development of Travancore Cochin—Peter P. C.
- Economic Conditions of Backward classes in Ahmedabad District—Pandya B. V.
- Regional Planning in Kerala—Nair P. A.
- Industrial Development in Madhya Bharat, a backward region—Tongia V. K.
- Imperfect Competition in International Trade—Rangnekar S. B.
- Pricing in a Planned Economy—Krishnamurthy B. V.
- A critical Review of the Theory of Employment—Honavar R. M.
- Measurement of Structural changes in an Economy with special reference to India—Rao K. S.
- Economics of Welfare Maximisation with special reference to Public Utility Pricing—Brahmananda P. R.
- Income Generation and Economic Progress—Bhatia R. J.
- Some Aspects of Mixed Economy—Joshi M. G.
- The Concept of Region in Economic Analysis A critical evaluation—Khambadkone M. V.
- History and Development of Life Insurance in India—Ray R. M.
- Insurance and State—Contractor J. P.
- Organisation and Management of Joint-Stock Companies—Miss Panandikar S. S.
- Wages and Conditions of Work of Factory Labour in Karachi—Merani S. T.
- Social Insurance for Industrial Workers in India—Punekar S. D.

Conciliation and Arbitration of Industrial Disputes in India—Miss Shroff A.D.

Industrial Relations—Zachariah K. A.

Economics of Minimum Wage—Acharya I. G.

Industrial Labour in Madhya Bharat—Mehta V. D.

A Study of Wage Regulation—Likhate A. N.

Social Accounting and National Income calculations with special reference to under-developed countries—Ezekiel H. H.

Futures Trading and Futures Markets in Cotton with special reference to India—Dholakia H. L.

System of Financial Administration in India—Pinto P. J. J.

Provincial Finance—Patel M. H.

Justice in Taxation in India with special reference to Gujarat—Lakdawala D. T.

Taxation of Income—Sarma N. A.

The Finance of Bombay Government, 1935-36 to 1950-51—Desai T. M.

Municipal Finance in certain Leading Indian States—Bhouraskar K. M.

Study of the Tax Structure of India with special reference to Central Taxes—Ojha P. D.

Local Finance in Madras State—Krishnaswamy J.

Public Finance and Employment with special reference to Under-developed Systems—Borkar V. V.

Public Debt in India—Bhouraskar D. M.

Pattern of Indian Public Expenditure, 1937-52—Mathews V. T.

Economic Prosperity of Bombay Province, 1919-1939—Kunte B. G.

Economic case for Socialism in India—Miss Nehalchand S.

Technique of Planning with special reference to Underdeveloped Countries—Waghle S. S.

Economic developments and possibilities of integration between India and South East Asia (including impact of China and Japan)—Kum. Vaidya L. N.

The Technique of Modern Commercial Policy with special reference to Commercial Treaties—Tiwari R. D.

Indian Sugar Industry—Shah N. A.

Textile Industries of Kashmir—Ganju M.

Regional Distribution of Industries—Pandit S. A.

Corporation Finance and Management in India—Cooper R. C.

Profits and Wages in the Cotton Textile Industry of Bombay—Trivedi V. R.

Industrial Punjab · A study in Partition Problems—Duggal D. S.

Indian Cotton Industry—Mehta S. D.

Present Position and Future Prospects of Chemical Industry in India—
Pandya G. M.

Effects of Protection on the Industrial Development of India—Gunishastri P. V.

Public Enterprise in India—Paranjpe H. K.

Cyclical Movements in India's Balance of Payments (1919–1939)—Manoharan T.

State Control of Industries in India—Paymaster K. R.

Recent Trends in the Industrial Economy of India—Desai B. C.

Small Scale Industries in India with special reference to Bombay City—
Sandesara J. C.

The Pattern and Prospects of India's Export Trade—Bharadwaj R. T.

Industrial Profits in India since 1945—Mehta B. V.

A study of Handloom Weaving in Malabar and South Kanara District—
Monteiro A. D.

Techniques of Transportation Planning with particular reference to railways
—Kum. Chandawarkar K. M.

Local Passenger Transport in Bombay—Patwardhan S. G.

Problems of Indian Shipping—Kamat R. G.

(vi) Theses Under preparation for the degree of Ph. D.

Changing Agrarian Pattern of Gujarat

Working of the Multipurpose co-operative Societies in Bombay State .

India in Sterling Area

Price and Production Movements in India during the Fifties

Bilateral Agreements and Economic Development

Wage Structure in Bombay City

Labour Force changes and Employment in India in relation to population
growth, 1951–1976

Optimum Degree of Price Inflation in underdeveloped countries

Financial Agencies in the Unorganised Money Market

Agencies of Rural Development

Decentralised Pattern of Development of Industries in India

Marketing Efficiency in Indian Agriculture

A study of Combination Movement in Indian Industries

Financial Intermediaries in India

Level and Structure of Employment in a Developing Economy

Some Aspects of Agricultural Organisation in a Developing Economy · India

Economics of Animal Husbandry with special reference to Bombay-Karnatak

Agricultural Surpluses and Economic Development

Analysis of Land Reforms in the State of Bihar

Nature and Extent of Under-Employment of Self-Employed Cultivators

A study of Economic Fluctuations in India, during inter-war years

Changing Agrarian Pattern in the Deccan

Integrated Scheme of Rural Credit

The Process and the Techniques of Mobilisation of Resources for Capital Formation

A study of the Rural Migration

Industrialization in Nepal-A study in Problems and Prospects with special reference to existing organised Industries

Capital Formation in Agriculture in India

Finances of the State Government-A Critical Study

Impact of Economic Development on Balance of Payments

Structure of India's Imports

Community Development Programme and Rural Economic Growth with special reference to Bombay-Deccan

II. Department of Civics and Politics :

(i) Research Schemes

The Department was started in 1948. It has undertaken six research schemes, four of which have been completed and reports on which have been published, viz. (1) The General Elections in Bombay, 1952 by Prof M. Venkatarangaiya, (2) The Reorganization of the Indian States by Prof. K. P. Mukerji, (3) The Role of the Opposition in the Bombay Legislature, and (4) Public Reaction to Congress Rule in Greater Bombay 1952-56, jointly published as 'Congress Rule in Bombay' by Dr. A. J. Dastur and Dr. Usha H. Mehta

The Department had undertaken for M. I. T. an enquiry into India's Image of America's Role in Asia.' The report was submitted to M. I. T.

Six other schemes, which are under preparation, are the following:—

1. A study of the consequences of the merger of the suburbs with Bombay City
2. A study of the General Elections of 1957 in Greater Bombay

3. A study of the social, economic and political background of Bombay Legislators

4. A study of the structure and organisation of political parties in India
5. An inquiry into some aspects of Institutionalised Medical Care in Bombay's General (Municipal) Hospitals

(ii) Publications based on Research Work done in the Department

The following are the research publications by the members of the staff.—

1. **Dr. Aloo J. Dastur :** (1) Man and his Environment, (2) Congress Rule in Bombay, (3) What is cold war? (in Gujarati), (4) India and the Commonwealth
2. **Dr. Usha H. Mehta :** (1) Government and the Governed A Study in Social Tensions (with Prof C. N. Vakil), (2) Congress Rule in Bombay, 1952-56, (3) Why Democracy? (in Gujarati)
3. **Dr. S. P. Aiyar :** (1) Federalism and Social Change
4. **Shri B. A. V. Sharma:** (1) The Bombay Municipal Corporation : An Election Study (with R. T. Jangam)
5. **Theses published** (1) Village Panchayats with special reference to Bombay State by Samant S. V. (2) Nature of Inter-relations of Governments in India in the 20th century by Divatia K. V. (3) Administrative Problems relating to Nationalisation with special reference to Indian State Enterprises by Murdeshwar A. K. (4) Role of the Higher Civil Service in India by Dwarkadas R.

(iii) Theses approved for the Ph. D. degree

- The end of the state in Ancient Indian Political Thought—Krishnan N. K.
 India and Parliamentary Democracy—Batiwala C. J.
 Trends in Modern Federalism—Thotappa K. B. Y.
 Nature of the Ancient Indian States—Nair V. S.
 Administrative Problems relating to Nationalisation with special reference to Indian State Enterprises—Murdeshwar A. K.
 Ideological Conflicts in Indian Political Life—Gopal P. V.
 The Bombay Legislature 1947-53—Wilson L. B.
 Social Legislation—Badhe G. S.
 The Role of the Higher Civil Service in a Welfare State with particular reference to India—Dwarkadas R.
 Nature of inter-relations of Governments in India in the 20th century—Divatia K. V.
 Modern Trends in Quasi-federalism—Aiyar S. P.
 State and Culture—Trivikram T. K. N.
 Village Self-Government in Bombay—Samant S. V.

Individual in Marxist Society—Dixit B. V.

Justice and its Administration—Mehra R. D.

Political Ideals of Plato—Joshi Nirmal

Parties and Politics in Kerala—Joseph P. T.

The Problem of Linguistic State in India—Satyanarayan K.

Burma and Parliamentary Democracy—Kalra L. D.

Right to Property with special reference to India—Tanksalwala M. S.

(iv) Theses under preparation for the degree of Ph. D.

The Rightist Parties in India

Labour Participation in Management with reference to India

Savings in a Welfare State

The Statutory Corporation in India (with special reference to the Industrial Finance Corporation of India, the State Bank of India, the Employees' State Insurance, the Damodar Valley Corporation)

The social and political background of the Indian Constitution with special reference to Article 40

Public Personal Administration in India

Public Administration in Ancient India with special reference to Kautilyas' Arthashastra

III. Department of Sociology :

The Department came into existence in 1919.

(i) Research Projects

The following are some of the research projects in progress in the Department -

(1) Prof. Ghurye and Dr. Kapadia conducted enquiry into 'Town and Country Relations' as revealed in (1) Haveli Taluka of Poona District and (2) Nao-sari Taluka of the Surat District.

On the background of this enquiry, Prof. Kapadia has initiated another enquiry on 'nature and extent of urbanization in South Gujarat'. Four Talukas -Vyara, Bardoli, Valod, Palsana, have been completed and the fifth-Gandevi will soon be completed.

(3) Dr. A. R. Desai has initiated an enquiry on 'Impact of Land Reforms on the Social Stratification in an Indian Village (Allali-Saganpura of Panch Mahals District)'

(4) The Department has undertaken another research scheme on 'Home Desertion by Juveniles' under the auspices of the University Grants Commission.

(ii) Publications

The following are the research publications by the members of the staff and students -

1. Dr. G. S. Ghurye (1) Culture and Society, (2) Family and Kin in Indo-European Culture, (3) Caste and Race in India, (4) The Social process, (5) The Aborigines—so called and their Future, (6) Occidental Civilization, (7) Indian Costume, (8) Race relations in Negro Africa, (9) Indian Sadhus, (10) Sexual behaviour of the American Female, (11) Caste, Class and Occupation in India, (12) The Mahadev Kohis, (13) Vidyas, (14) Scheduled Tribes, (15) After a Century and a Quarter, (16) Man and his Gods

2. Dr. K. M. Kapadia (1) Marriage and Family in India, (2) Hindu Kinship, (3) The Hindu Code Bill. A critical study, (4) The Matrilineal Social Organisation of the Nagas of Assam, (5) The Hindu Marriage and Divorce Bill : A critical study, (6) Marriage and Family in India

3. Dr. A. R. Desai (1) Social Background of Indian Nationalism, (2) Rural Sociology in India

4. Kumari P. A. Cabinetmaker Government and the Displaced Persons (Jointly with C. N. Vakil)

5. Dr. D. Narain : Hindu Character

6. Others Thakurs of Sahyadri—Chapekar L. N

Bangalore : A Socio-Ecological study—Venkatarayappa K. N.

Delhi : A study of Urban Sociology—Bopegamage A.

Sindh : Culture—Thakur U. T.

Folk Dance of Maharashtra—Agarkar A. J.

The Nature and Grounds of Political Obligation in the Hindu State—Anjaria J. J.

The Farmer His wealth and welfare—Bhagat M. G.

Communication at Modern Ideas and Knowledge in Indian Villages—Damle Y. B.

Man and his Environment—Kum. Dastur A. J.

Life and Living in Karnatak (Gokak Taluka)—Desai M. N.

Woman in Modern India—Smt. Desai N. A.

Hindu Art in its Social Setting—Kum. Dubash P. N.

Society and the Visually Handicapped—Halder R. M.

Hindu Woman and Her Future—Smt. Hate C. A.

Social Conditions in India as Depicted in Jain Canons—Jain J. C.

Agris—Kale D. N.

Hindu Exogamy-Karandikar S. V.

Study of Indian Crime-Kum. Kerawala P. C.

Evolution of Soviet Society-Kurup C. P. D.

The Domestic Servant Class-Kum. Mehta A. B.

Marriage and Family in Gujarat-Smt. Mehta S.

Changing Views on Marriage and Family-Merchant K. T.

Leisure and Recreation in Society-Smt. Nakhoda Z. Y.

Untouchable Workers in Bombay-Pradhan G. R.

The Problem of Indian Polity-Pratapgiri R.

Son Kolis-Smt. Punekar V. B.

The Greater Bombay-Rajagopalan C.

Social Change in Malabar-Rao M. S. A.

Whither Woman-Rage Y. M.

Jaina Community : A Social Survey-Sangave V. A.

The Warlis : A study of an Aboriginal Tribe of the Bombay Presidency-Save K. J.

Society and the Criminal-Sethna M. J.

The Indian Film-Kum. Shah Panna

Juvenile Delinquency in an Indian Setting-Kum. Sheth H. B.

Marriage and Family Life among the Kannada castes of the Mysore State-Srinivas M. N.

Vaishnavas of Gujarat-Thoothi N. A.

Textile Technocracy-Unwalla D. B.

Hindu Social Institutions-Valavalkar P. H.

Evolution of Morals in the Epics-Smt. Vora D. P.

The Development of National Education in India-Vyas K. C.

Social Renaissance in India-Vyas K. C.

The Katkaris A Study of Primitive Social Life-Weling N. A.

(it) List of Approved Theses for the degree of Ph. D.

Causation in Human Society-Panchanadikar K. C.

The Communication of Ideas through Adult Education in India-Kum. Qurbansingh B.

Work-An Evolution : A study in the City development-Kum. Modi M. S. H.

*Social Ecology of Provincial Towns with special reference to Bangalore Venkatarayappa K. N.

*An Ecological Study of the City of Delhi-Bopegamage A.

Rural Reactions to Urbanization-Kum. Rao. V.

Social Ecological Study of Gokak Taluka-Kulkarni M. G.

*Suburban Ecology at the City of Bombay-Rajagopalan C.

Industrial Labour in Bombay A Socio-Economic Analysis-Chirde S. B.

*Human Relations in Factories-Unwalla D. B.

Social Conditions of Textile Labour in Bombay with special reference to Productivity-Makharia M. P.

Effects of Textile Industry on Ratnagiri's Rural Population-Kum Patel. K M.

*Hindu Social Institutions with special reference to their Psychological-Valvalkar P. H.

Hindu Kinship-Kapadia K. M.

Hindu Theory of War-Moorthy M. V.

*Social Background of Indian Nationalism-Desai A. R.

*Conditions in India as depicted in Jain Canons-Jain J. C.

The Social Background of Hindu-Muslim Relationships-Mekhri G. M

Indian Music and its Social Bearing-Smt. Thacker S. K.

*Evolution of Morals in the Epics (Mahabharata and Ramayana)-Smt. Vora D. P.

Position of Hindu Woman-Smt. Hate C. A.

The Child in Society-Kum. Mistry D. K.

The Family as a Unit of Society-Kum. Mistry J. P.

Inter-Caste Marriage in Bombay State-Kannan C. T.

Social Life and Manners of the Parsis in Iran and India-Dalal F. M.

Social change with particular reference to Parsi Community-Kum Sahiar G.H.

The Indian Christian Community with particular reference to the East Indians-Kum. Baptista E. W.

Untouchable Workers of Bombay City-Pradhan G. R.

The Social and Economic Conditions of the Meghwal Untouchables in Bombay City-Mehta B. H.

The Farmer, His Welfare and Wealth-Bhagat M. G.

Life and Living in Rural Karnatak-Desai M. N.

Socio-Economic Survey of the Domestic Servant class-Kum. Mehta A. B.

Some of the Aboriginal Tribes of South Gujarat-Khanapurkar D. P.

The Coorgs · A Socio-Ethnic Study-Srinivas M. N.

The Pathare Prabhus of Bombay-Rao V. D.

Baj Khedawal Brahmins of Gujarat-Bhatt B. J.

*Thakurs · An Ethnic Study-Chapekar L. N.

*Agris · A Socio-Economic Survey-Kale D. N.

- ×Jain Community : A Social Survey-Sangave V. A.
- ×Son kolis of Bombay-Smt. Punekar V. B.
- A Socio-Ecological Study of an Immigrant Community-Kum. Mythili K. L.
- The Newars of Nepal-Nepali G. S.
- Social Thought of Havelock Ellis-Gandhi K. H.
- Renascent India-Vyas K. C.
- Social and Political Thought of Mahatma Gandhi-Kum. Mehta U. H.
- Social Philosophy of Gandhiji-Shah M. V.
- Cultural Background of Gujarat-Majmudar M. R.
- ×Sindh Culture-Thakur U. T.
- The Art and Science of Classical Dancing and its Social Bearings-Kum. Pooviah S.
- ×Changing Pattern of Culture (Malayalane Region)-Rao M. S. A.
- ×Hindu Social Types-Narain D.
- Social Basis of Crime-Desai I. P.
- ×Society and the Criminal-Sethna M. J.
- ×Nature and Volume of Crime in Bombay State-Kum. Keravala P. C.
- Juvenile Delinquency in Bombay State-Kum. Sheth H. B.
- Society and the Visually Handicapped-Halder R. M.
- ×Folk Dance and Physical Education with special reference to Maharashtra-Agarkar A. J.
- The Extent of Rational Thought in Educated India-Athaide R. V.
- Prostitution in the City of Bombay-Jayakar R. B. K.
- Visually Handicapped in the Bombay State, their social background and present status-Vyas R. T.
- Cripples in Bombay State-Kum. Bhatt V. G.
- A Study of Problem Children in the City of Bombay-Smt. Alvares L.
- ×Social Study of the Cinema in Bombay-Kum. Shah Panna
- Leisure and Recreation in Society-Smt. Nakhoda Z. Y.
- ×Social Differentiation and Differentiation in Emoluments-Damle Y. B.
- ×Evolution of Soviet Society-Kurup C. P. D.
- ×Social Organisation in a Refugee Population-Sharma M. L.
- Concerning Sentiments : an Essay on the Psychology of Society-Sabnis G.
- Social Services in India with special reference to the City of Bombay-Kum. Cabinetmaker P. H.
- Man and his Environment-Kum. Dastoor A. J.

(iv) Ph. D. Theses under preparation

Human Relations (Management) in Public and Private Sectors
Social Legislation in India

× Published

Leadership in Socio-religious Organisations with special reference to Maharashtra State

Counselling for Marital Happiness

Social Background of Industrialism in Western India

The Bombay Collegian—A Study in Social Background

Marriage and Family in Kerala

The Impact of Welfare Measures on Rural Society

Socio-Ecological Study of a Workshop Town with reference to Chittaranjan

Social Impact of Planning in India

White Collar Worker of Bombay and his Social Background

Pattern of Urban Development in South Gujarat

Changing Pattern of the Hindu Family

Family Planning Its Acceptance and Limitation

Aspects of Human Organization of Factories

Rajputs of Saurashtra

Communication and Social Welfare

Freud on Man and Society

Social Idealism and Realism in Gujarat (as reflected in Gujarati Literature)

The Meities of Manipur

IV. Department of Applied Psychology :

The Department at present admits students for the M. A. degree in Psychology by papers and offers facilities for guiding a limited number of candidates for the Ph D. degree.

(i) Theses under preparation For the Ph D. degree

1. An investigation into the genesis of attitude towards future vocation
2. Problem of student Indiscipline in Greater Bombay
3. A Psychological Study of the Methods of Measurement and Prediction of Athletic Ability in Kabaddi and Khokho
4. The Muller-Lyer Illusion under different conditions
5. The Construction of a Multiphasic Personality Scale suitable to Indian conditions
6. Attitude towards Death
7. Experimental Investigation of Exploratory Drive in the Rat
8. Influence of fixation of posture and voluntary changes in respiration on some phenomena of attention and learning
9. A Psychological Study of the Personality Traits of Employed Women
10. An experimental study of Emotional Reactivity as related to some yogic and non-yogic conditions

V. Department of Chemical Technology :

(i) Courses of Study

The Department of Chemical Technology has been instituted to form a link between science and industry, so that university graduates in pure science, who intend to adopt an industrial career, may obtain the necessary technological training to take an important part in industry. As a teaching institution it performs, therefore, the dual function of providing an outlet for graduates of the colleges and of supplying the demand for technologists capable of applying their knowledge to practical problems without unduly long apprenticeship in the factory.

The Department at present admits students for the degrees of B. Sc. (Tech.), B. Chem. Eng., B. Pharm., M. Sc. (Tech.), M. Sc. (Chem.) and is guiding students for the degree of Ph. D. in Chemistry and Chemical Technology.

(ii) Facilities for Research

Students proceeding for the higher degrees of M. Sc. (Tech) and Ph. D. in the Faculty of Technology are offered facilities for carrying out research under the direction of the members of the staff in the various laboratories of the Department. Other qualified persons, intending to carry out research work within the purview of the Department, whether proceeding for a degree or not, are also admitted if accomodation is avilable.

Upto 1961, 77 theses for Ph. D. in Chemical Technology and 39 theses for Ph. D. in Chemistry have been prepared in the Department, which have been also approved by the University.

(iii) Industrial Investigations and Analytical Work

In addition to its normal academic functions of teaching and research, the Department acts as a central research and analytical laboratory for the benefit of the textile and chemical industries and it co-operates with mills and factories in carrying out industrial research on their behalf or investigating any technical problems that may arise in the course of their work. In the equipment of the Department this object has been kept in view and unit plant installed so that semi-works scale experiments may be carried out on problems relating to textile processing and to the manufacture and application of chemical products.

While routine chemical analyses of every kind are undertaken on behalf of industry in general, the Department functions in particular as a test house for cotton mills, enabling them to obtain independent information on the dyes, chemicals and auxiharies used in the textile industry.

The Department undertakes routine analysis, investigations of technical problems, and long-range schemes of research on behalf of industry and the general public, on payment of scheduled charges.

VI. List of Approved Theses for the Degree of Ph. D. in Gujarati :

1. Doubtful authorship of some of the works of Premanand (1947)-P. N. Vakil
2. Ramanbhai A study (1949)-B J Zaveri
3. Narasimhrao Divatia A study (1950)-Smt. Susmita Medh
4. History of Gujarati Novel (1950)-R. I. Patel
5. Swarabhar ne teno Vyapar (Accent in Gujarati and its effects on the evolution of Gujarati language) (1950)-G. D Patel
- 6 A critical survey of the three dramas attributed to Premanand (1951)-D. D. Pandya
7. Treatment of nature in the medieval Gujarati literature (1952)-Kumari T. L. Dave
8. Forms of literature and their growth in medieval Gujarati literature (1952)-C. H. Mehta
9. Manilal Nabhubhai Dvivedi A study (his life and letters) (1953)-D. P Thakar
10. Dr. Anandhankar Bapubhai Dhruva in his writings (1954)-J. C. Pandya
11. Raje . A Study (1955)-R. N. Jani
12. Dalpatram . an approach to his poetry (1957)-T. P. Bhatt
13. Ramanlal Vasantlal Desai-Life and literature (1959)-H. M Doshi
14. Vallabh Mevado . A study (1959)-Smt. J. G. Shah
15. Mira-her life & work (1960)-Smt. N. L. Zaveri
16. Kavi Nakar-A study (1961)-C. S. Trivedi
17. A critical study of old Gujarati Rasa form as determined from the specimens available between 12th and 18th century A. D. (1961)-Smt. B. M. Vaidya
18. The development of literature on Nala and Damayanti with special reference to Gujarati literature (1961)-R. C Shah

III. OTHER INSTITUTIONS

A. G. TEACHERS COLLEGE, AHMEDABAD

The Post-Graduate Centre in Education of the Gujarat University is situated at the A. G. Teachers College, Ahmedabad. Hence research students are enrolled for Ph. D Degree in Education. For the M Ed. degree also the students take up various problems of research in Psychology and Education. The staff of the College conduct researches in Psychology and Education with grants from the Ministry of Education, New Delhi and from the Gujarat University. The staff have special interest in Educational and Psychological Measurement and Guidance.

ATIRA

A textile research laboratory, created and sustained by the co-operative effort of the industry and the Government of India, was envisaged by the Ahmedabad Millowners' Association as early as 1944. In December 1947 the Ahmedabad Textile Industry's Research Association was registered and its 71 founder members, who were all members of the Ahmedabad Millowners' Association, made an initial contribution of rupees 50 lacs. The Government of India then contributed rupees 19 lacs, and promised to bear, during the first five years, half the recurring expenses of the Association, upto a maximum of rupees 1 lac & a half in any one year. The provision of rupees 70 lacs for capital expenditure and a total recurring expenditure of about rupees 18 lacs for the period of January 1949 to March 1954 was expected. To meet the latter, the member mills agreed to contribute annually one anna per installed spindle and rupees 2 & a half lacs per installed loom, thus bringing the contribution of the mill over the five year period to rupees 11 lacs. The Government's contribution over the same period was expected to be rupees 7 lacs. ATIRA began modestly in 1949 in three rooms in the M. G. Science Institute Building. Soon 50 acres of land were acquired on the Gujarat University Campus. The magnificent new building which now houses the various departments of ATIRA was opened by Shri Jawaharlal Nehru on 10th April, 1954. In 1953 membership was made open to mills all over India. This satisfied the need felt by a large section of the industry in different parts of the country by providing benefits of scientific research and development at normal cost.

The functions of various Divisions of ATIRA are as follows —

(1) Physics Division

Basic Research. The Division is conducting basic research into the fine structure and physical properties of cotton fibres and the modifications to these which can be made by various physical and chemical means. Another field of basic work is the behaviour of fibres in bulk during and after various processing operations. This would include the structure and mechanical properties of fibre bundles, slivers and rovings.

Applied Research : The main field of applied research is the development of instruments for physical textile testing. Many new instruments which are of use in day-to-day quality control in a mill have been developed and made available to ATIRA's member industry.

Consultation and Service : The Division has a well-equipped physical testing laboratory which is placed at the disposal of all member mills. This laboratory also undertakes annual surveys of yarn quality and tries to draw some norms of quality for use by the member industry.

(2) Mechanical Processing Division

As with other disciplines in ATIRA the functions of this Division can be broadly classified under three heads

- (i) Long term research
- (ii) Short term technological project, and
- (iii) Consultation and services to member units

At present long term research is being carried out mainly on fibre configurations in the intermediate products prior to the yarn, and on tensions arising during the spinning of yarn. Attempts are being made to understand why and how certain types of dispositions of fibre ends are created in processing and what their effects are on the quality of yarn. Similarly a detailed study is being carried out on the tensions which are generated in yarn during its manufacture, with a view, eventually, to be able to control them so that "breaks" of yarn can be minimised.

Short term technological projects are related mainly to better utilisation of existing machinery and raw material. Optimum conditions of processing with various types of machines are being constantly investigated to arrive at suitable technological parameters for ensuring better quality, or higher production or lower waste. Ways and means of upgrading Indian cotton are explored, including blending with viscose staple and synthetic fibres.

Consultation to mills forms a big part of the activity of this division. Specific problems on processing are investigated and suggestions given for remedial measures. Besides this, overall surveys of departments are undertaken and advice given for improvement as well as for renovation and modernisation.

(3) Chemistry & Chemical Technology Division

The broad areas of work in this Division are

- (i) Chemical modifications of cotton
- (ii) A study of naturally occurring polysaccharides
- (iii) Physico-chemical studies of textile chemical processes

- (iv) Applied research on problem of chemical processing
- (v) Technical surveys and consultation to member mills, and
- (vi) Routine testing

The first three fields are essentially of a long term nature in which the objective is to get more knowledge about the structure and properties of important raw materials of the textile industry, such as cotton, starch, gums etc. Recent research in ATIRA and other laboratories has shown that the properties of the cotton fibre can be radically changed by various chemical treatments. Properties such as crease resistance, shrinkage resistance and rot proofing can be imparted to cotton by chemical modifications. Basic and applied research in this field thus constitutes an important area of work.

Along with these long term studies on cotton, which is the primary raw material of the industry, studies on other raw materials such as starches and gums have also been undertaken. The principal aim here is to survey important sources of carbohydrates in India besides the edible starches being used today, study their fundamental structures and properties and evaluate their application to industrial processes.

Most of the work of a fundamental nature is undertaken under the research fellowship programme. ATIRA is recognized at present for postgraduate research by Gujarat, Baroda, Bombay and Madras Universities. The Division has at present 6 Research Fellows working for M. Sc. Tech. and Ph. D. degrees.

Technological research is essentially aimed at improvements in the existing processes of technology for better quality or economy. Several short-term projects of this nature have been investigated in the last two years. The technical service and consultation work which is closely linked with technological research has been growing at a rapid pace, particularly in the last three years. Detailed surveys of existing processes, machinery, work organization, utilization of men and machinery etc. are undertaken in member mills to give to the mill a clear and detailed picture of its working. Recommendations are given wherever necessary for improving quality, quantity and economy of production. Consultation work also includes with increasing frequency problems of renovation and modernization. Advice is given to the mills on choice of equipment, selection of appropriate processing methods, balancing of machinery production, layouts, etc.

Routine testing of dyes, chemicals and other raw materials used in the industry is also undertaken for member mills as a regular activity of the Division and a separate testing laboratory is maintained for this purpose.

(4) Human Relations Division

In the Human Relations Division, field consultation can be offered in the following areas :

- (a) Job and work analysis
- (b) Job descriptions
- (c) Recruitment and selection of employees
- (d) Induction of employees
- (e) Merit rating procedures
- (f) Suggestion schemes
- (g) Financial and nonfinancial incentives
- (h) Accident survey of employees
- (i) Attitude survey of employees
- (j) Organising effective meetings and conferences, and
- (k) Effective communication

Supervisory Training Programme Regularly supervisory training courses, each of two weeks duration, are conducted for the supervisors. In imparting training the emphasis is on extensive use of Group Discussions, Case Discussions and Role-playing Sessions. We believe these methods of learning stimulate thinking, encourage participation and expose trainees to a wide variety of diverse viewpoints.

The objective of this programme is to develop in the supervisor (a) understanding regarding the complexity of factors affecting supervision, (b) skills of improving performance of workers, and (c) self-confidence and foresight to face challenging situations.

Management Development Programme Regular seminars for Executives are organised comprising ten half-day (2 hours & a half) sessions where cases are discussed. In Case Discussion Method sufficient data is given to the participants to elucidate the factors that lead up to complex social situations. Intensive discussions increase awareness and understanding for perceiving the different forces contributing to confused roles and frustrating relationships in group or person to person behaviour.

The objective of this programme is to develop in an executive (a) an awareness of the multi-dimensional problems of structure and functioning in organisations and (b) skills in dealing with people in face-to-face or day-to-day relationships.

Member mills can depute their staff for training in methods of physical testing, chemical testing and quality control. There are no regular courses for this and training is arranged on an individual basis.

(5) Engineering Division

- (a) Fuel efficiency tests on steam boiler plants
- (b) Drying of textiles and efficient utilization of steam in textile industry
- (c) Effect of mechanical stokers on the efficiency of steam boilers

- (c) Effect of feed water treatment on the heat transfer coefficients in economisers of boilers, and
- (d) Methods of accelerating the drying rate of cylinder driers

(6) Group for Operational Studies

- (a) Current projects handled by members of the Group in the fields of costing, finance, operational research and personnel management
- (b) Operational studies which embrace facultatively more than one discipline of this organization, and
- (c) Industry-wide surveys of a repetitive nature based on the needs of the Industry for such feedback

BAKUBHAI MANSUKHBHAI INSTITUTE, AHMEDABAD

The Institute was founded by the late Smt. Nirmalaben Bakubhai 30 years ago to commemorate the memory of her husband Shri Bakubhai Mansukhbhai. It is now working in its new building on Ashram Road, near Nehru Bridge.

The assumptions underlying the various activities of the Institute throughout its development may be stated as follows —

Rapidly changing technological and economic conditions with their concomitant social changes make new and stressful demands on individuals and on social groups. The stresses and strains which result from these changes lead to maladjustments in the family, in work, and in community life, and consequently, to varying manifestations of mental ill-health. The task of preventive social medicine is to assist individuals and groups to become aware of the nature of these tensions and to foster processes of mutual adaptation in society as a whole and in the units that compose it

The activities of the B. M. Institute, consist of research, service and training in preventive social medicine, based upon the kinds of services which members of our society need. On the research side, some pilot projects have been continued, viz, Coping Processes in young children, Life Pattern Studies, Child Rearing Practices, Mother's Perception of the Child, Family Relations Test, Effect of castration in Muslim boys.

Project papers on (1) Problems of communication and resistance in introducing change in a rural community in Orissa, Failure in examinations, some goals and barriers as perceived by high school adolescents in Ahmedabad, Status of thinking of headmasters of secondary schools of Ahmedabad on vocational and educational guidance, Mother's Perception of a child, etc. have been prepared by the Institute

The following research papers have been published by the members of the staff —

(i) Psychiatric approach to some chronic diseases, (ii) Environmental stress and problem behaviour of a child, (iii) The emotionally handicapped child, (iv) A note on the unconscious significance of some of the problems in management, (v) The concept of a therapeutic community in the treatment of emotional disorders, (vi) Family relations and extra-familial human relations, (vii) Some neglected problems and approaches to the study of family in India, (viii) Mother-child separation and personality deficit, (ix) Some characteristics of psychological data, and (x) Personality

BHARATIYA VIDYA BHAVAN, BOMBAY

Bharatiya Vidya Bhavan was founded in 1937. From small beginnings it has now grown, under the inspiring guidance of Dr. K. M. Munshi, into an all-India Institution, having for its object the revitalising of Dharma in its three-fold form of Truth, Good and Beauty-Satyam, Shivam, Sundaram.

During the period of 25 years the Bhavan has striven to serve the cause of re-integrating Indian Culture with elements suited to modern conditions, through its several constituent institutions and kendras, through its book series and journals, through dance, drama and music.

The Constituent Institutions of the Bhavan are as follows —

1. Mumbadevi Sanskrit Mahavidyalay—An Oriental College teaching Sanskrit and Shastras by traditional methods for Shastri and Acharya and for Vachaspati (research)

2. Sanskrit Pariksha Vibhag—Department of Easy and Higher Sanskrit Examinations

3. Gita Vidyalay—An Academy for study of Indian Culture with special reference to Bhagavad Gita

4. Munshi Sarasvati Mandir—An Institute of Culture with library consisting of over 65000 volumes including many indological volumes and a Museum consisting of old and valuable palm-leaf manuscripts, coins, paintings etc.

5. Munglal Goenka Samshodhan Mandir—A Post-graduate and Research Institution recognised by the University of Bombay coaching students for M. A. and Ph. D. degrees

6. Vallabhji Ramji Balpustakalay—A Library for children with facilities for indoor games, educational films etc.

7. Bharatiya Kala Kendra—It is devoted to the development of drama, dance and music. It produces dramas and dance ballets in English as well as in Hindi, Gujarati and Marathi to encourage amateur talents. It also sponsors every year an Inter-Collegiate Dramatic Competition.

8. Bharatiya Sangit Shikshapith—An Academy of Indian classical music

recognised by the Central Government for courses leading to the Bachelor of Music degree.

9. Bharatiya Nartan Sikshapith—An Academy of Dance for teaching Manipuri, Kathak, Kathakali and Bharata Natyam

10. Bharatiya Itihasa Vibhag—One of the major schemes of the Bhavan is the publication of 'The History and Culture of the Indian People' in 10 volumes, viz. (1) Vedic Age, (2) The Age of Imperial Unity, (3) Classical Age, (4) The Age of Imperial Kanauj, (5) The Struggle for Empire, (6) The Delhi Sultanate, (7) British Paramountcy and Indian Renaissance, (8) The Mughal Empire, (9) The Maratha Supremacy, (10) India since 1918. So far seven volumes have been published. This is considered to be the first successful attempt at re-writing the history of India by her own sons on a very exhaustive basis.

11. Book University—The Bhavan publishes books, ancient and modern, at low price (Rs. 2 each) to make available the best literature and classics of India and the world to the common man in an easily understandable form. So far 100 titles have been published and over 10,00,000 copies have in all been sold. Some of the books have also been published in Hindi, Marathi, Bengali and Tamil.

12. Prakashan Mandir—This Department also publishes the results of the research and other activities of the various Mandirs of the Bhavan and books of cultural value. Its publications include .

(a) Bharatiya Vidya Series—Critical editions of texts, translations and original works of research in Indology—in Sanskrit, and English and Gujarati are published in this series. The following publications are notable :—

1. Visuddhimagga of Buddhaghoshacarya edited by Prof. D D. Dharmananda Kosambi
2. Bharateshwara Bahubalirasa edited by Acharya Jina Vijayaji
3. Jnanadipika—Mahabharata Tatparya Tika of Devabodhacarya edited by Dr. Sushil Kumar De
4. Candralekha-sattaka of Rudradasa edited by Dr. A. N. Upadhye
5. Gujarati Svara-Vyanjana Prakriya (Guj. Translation of Dr. Turner's Gujarati Phonology) by Prof. K. K. Shastree
6. Vedavada-Dvatrimshika of Sri Siddhasenadivakara edited by Pandit Sukhlalji
7. Rasaratna-pradipika of Allaraja edited by Dr. R. N. Dandekar
8. Veda-Bhashyasara from Sayana-Bhashya edited by Pandit Sukhlalji
9. Anyoktyashtaka-samgraha edited by Smt. Pratibha D. Trivedi
10. Arthavadadi-Vichra of Kshirasamudravasi-misra edited by Achary T. A. V. Dikshitar

11. Kadambari of Bhalan (Purva-bhag) edited by Prof. K. K. Shastree
12. Kaumudi-Mahotsava edited by Smt. Shakuntala Rao Shastri
13. Sacrifice in the Rigveda by Prof. K. R. Potdar
14. Vagvyapar by Prof. Dr. Harivallabh Bhayani
15. Madana-Mohana of Samal edited by Prof. Dr. Harivallabh Bhayani
16. Simhasan-Batrishi of Samal edited by Prof. Dr. Harivallabh Bhayani
17. Vetala Pacheesi edited by S. S. Patel
18. Nibandha-sangraha edited by Muni Jina Vijayaji
19. Bhasa A Study by Prof. Dr. A. D. Pusalkar
20. Prakrit Languages and their contribution to Indian Culture by Dr. S. N. Katre
21. Bharatiya Sanskriti edited by Raghunath
22. Savitricaritam tatha Kupamanduka-vritih edited by Atmaram Shastri
23. Vyavahara-Prakasha of Prithvichandra edited by J. H. Dave

(b) **Singhi Jain Series**—Critical editions of ancient works and manuscripts connected with Jain religion and literature are published in this Series. 52 volumes have been published so far.

The Bhavan publishes four journals at present, viz. (1) Bharatiya Vidya—An Indological Research Quarterly in English, (2) Bhavan's Journal—An English Fortnightly devoted to life, literature and culture, (3) Bharati—A Hindi monthly, (4) Samarpan—A Gujarati monthly

The Bhavan also conducts the following colleges —

(1) College of Journalism, Advertising and Printing, Bombay, (2) M. M. College of Arts and N. M. Institute of Science, Bombay, (3) Bhavan's College of Arts & Science, Dakor, (4) Sardar Patel College of Engineering, Bombay

B. J. MEDICAL COLLEGE, AHMEDABAD

The old B. J. Medical School was converted into B. J. Medical College in June 1946. It is now affiliated to the Gujarat University for the M. B., B. S., M. D. and M. S. degrees. It is also recognised by the Medical Council of India for various degrees.

The research work completed or being carried on in various departments is as follows —

(1) **Anatomy Department**—The study of confluence of sinuses of the dura-mater, the study of the nutrient foramina of the long bones, the study of arterial patterns of the palmar arches of the hand, the studies of the measurements of the head of the femur and the head of the humerus with special reference to sex, the study of the lengths of long bones with reference to stature, the study on the incidence of the retro-duodenal artery are prepared or under preparation for dissertation.

(2) **Physiology Department**—Investigation on various problems of importance in Medical Bio-chemistry as well as in diet and nutrition is in progress. A number of articles of medical importance have been prepared and published in Medical Journals by the members of the staff.

(3) **Pathology Department**—A number of research articles on Tuberculosis, Cancer, Liver Functions, Anaemia, Epidemic Dropsy, Blood Groups, Vascular changes, Vitamin B₁₂, Respiratory Diseases, etc, have been prepared and published by the members of the staff in various Medical Journals.

(4) **Pharmacology Department**—The department is guiding research on (1) Production of Cirrhosis of liver in experimental animals with chemical agents, (2) Pharmacological evaluation of a recently synthesized new series of local anaesthetics, (3) Neuro muscular blocking activity of antihistaminic compounds, (4) Hypoglycemic activity of Momardica Charalia lima, (5) Pharmacological evaluation of a new anti coagulant.

(5) **Preventive and Social Medicine Department**—The department has prepared and published various surveys of morbidity and health, survey of infant mortality, nutrition survey of selected families, etc.

(6) **Medicine Department**—The department has published research papers on various topics. It intends to carry on further research in (1) A study of the relapse rate and antibody response to T. A. B Vaccination in chloramphenicol treated Typhoid cases, (2) The experiences of liver biopsy with a new needle in various hepatomagalies in Gujarat State, (3) A study of total pariental cell-mass response to augmented histamine test in severe anaemias in Gujarat State, (4) A study of correlation between hepatic function, splenic pressure and clinical picture in cases of portal cirrhosis.

(7) **Department of Obstetrics and Gynaccology**—The department has published research material on incident of R H negative mothers and erythroblastosis in thier children, results of prolapse operation, preventive preclamensia, bladder stones in genital prolapse, adenomyosis uteri, outcome of pregnancy and labor in a primogravila, the ectopic ureter, etc. The department intends to carry on research in the prevention of preclamensia, the use of intra-uterine devices for prevention of conception, study of intercurrent eclamesia, study of the changes of foetal heart sounds with varying maternal pulse, etc.

CENTRAL INSTITUTE OF RESEARCH IN INDIGENOUS SYSTEM OF MEDICINE, JAMNAGAR

The Institute was established by the Central Government for the promotion of Ayurved and research in Indigenous systems of Medicine, in 1952. It is managed by the Governing Body appointed by the Ministry of Health. There is also a Scinetific Advisory Council consisting of reputed members of the profession and other branches of science.

The main problem of research at present is anaemia and allied diseases and treatment of the same by Ayurvedic medicines. A small hospital is attached and outdoor patients are also treated. About 70 medicinal herbs are being investigated in the Pharmacognocny Department. In the Pharmacy of the Institute all medicines required for the Institute are being prepared.

CHUNILAL GANDHI VIDYA-BHAVAN, SURAT

The aim and object of the institute is to organise instruction in post-graduate courses and to plan, promote and conduct research in all subjects of higher learning in Arts, Science, Commerce (with special reference to local or regional problems), Indology, Sanskrit and Gujarati Language and Literature.

The institution has published important research and critical publications. It also publishes Annual Bulletin.

The proposed research publications of the Institution are as follows —

(1) Monograph of the Parsee community, (2) Papers of Govardhauram Tripathi, (3) Readings from the Accounts of Foreign Travellers in India with special reference to the social history of Gujarat, (4) History of South Gujarat (the Pre-Chalukyan age), (5) The Spoken Language of the Dangs, (6) Bhagvad Gita with Gujarati translation by M. N. Dvivedi

FORBES GUJARATI SABHA, BOMBAY

The Institution was established in 1865 A. D. The Founder President was Sir Hon'ble Justice Kinloch Forbes. About 80 books of research in the fields of literature, language and culture have been published so far from this institution. It has a rich library consisting of 20000 books and 1500 valuable manuscripts.

The institution gives all facilities to research scholars, and arranges lectures for students. It also arranges essay-competition for college students every year.

A quarterly in Gujarati named 'Forbes Sabha Traimasik' is also published from this institute.

GUJARAT RESEARCH SOCIETY

Bombay and Ahmedabad

The Gujarat Research Society was formed in October, 1936 with the object of organising, promoting and co-ordinating research and higher learning in various branches of knowledge, with special reference to Gujarat, Saurashtra and Kutch. A large number of competent scholars in different branches of knowledge, as well as eminent persons interested in the cultural progress of Gujarat, have joined the Society, and it is expected that in due course the co-operation of many other persons will be forthcoming.

With the aims and the objects of the Society to promote, organise and co-ordinate research in all braches of knowledge, and to collect and publish accurate data on all subjects relating to Gujarat and outlying areas it has been careful to leave out the study on problems connected with literature, religious life, and politics but has concentrated on the Scientific problems concerning the heath, diet, physical fitness and mental health. It has taken up for study Socio-economic as well as cultural and regional problems of the people by making regional studies. It also encourages the study of history, culture and lînguistics of Gujarat inclusive of Saurashtra and Kutch. While concentrating on regional studies, it believes strongly in the integration and progress of the Indian Nation as a whole and as an important unit in the world. Research knows no limitation of space and region, except those imposed by human and monetary resources.

The following is a brief outline of the various activities undertaken by the Society and its achievements since its inception in 1936. These activities have been spread to various branches of knowledge and learning This has been possible because of the co-operation and team work of the various sub-committees appointed for the purpose.

I. History, Archaeology and Culture

Some of the oustanding activities conducted by a special committee for this section are as follows :

(a) The Celebration of the late Dr. Bhagwanlal Indrajî Centenary in 1937 was organised by this Society in Bombay and in other parts of Gujarat by (1) Special Commemoration Volume; (2) the erection of a bronze statue and locating it in the Library of the Bombay University; (3) naming a street after the Great Scholar in Junagadh, the place where he was born, and in Bombay where he worked and died.

(b) The first Gujarat Prehistoric Expedition in the Sabarmati Valley was organised by this Society in 1941, under Dr. H. D. Sankalia with the co-operation of the late R. B. K. N. Dikshit. Brilliant and epoch-making results have been since achieved by them with the discovery of the extension of Indus Valley Culture and also with their work in Narmada Valley.

(c) Surveys of National Resources of Gujarat have been conducted from time to time and the following monographs have been already published : "Meteorology of Maha-Gujarat," "Plant Life of Maha-Gujarat," "Animal Life of Maha-Gujarat," "Geological Evaluation of Maha-Gujarat," "Statistical Abstract of Maha-Gujarat," "Linguistic Limits of Maha-Gujarat," "Race Elements in Cultural Gujarat," "The Language of Maha-Gujarat," "Botany of Dang District" and "Birds of Gujarat."

(d) The Centenary of Shri Jayakrishna Indraj, the Great Botanist was celebrated in 1948. In his memory a series of Botanical Surveys in Gujarat including the Dang District have been undertaken under the supervision of Dr. R. D. Adatia. Two Volumes on Dang, and one on the Plants of Gujarat have been published.

As the statue from the University Library is not available in our New Building, a photograph of this scholar of International repute was unveiled in the New Building, Samshodhan Sadan at Khar on Friday 23rd March 1962 at the hands of Shri SriPrakasha, Governor of Bombay.

II Health Research Institute

The society has been interested in the health problems of the community as a whole and a special committee consisting of eminent doctors of the city had been appointed right in the beginning of the Society. The activities of this committee have developed into the present Health Research Institute which has been carrying on its activities at "Samshodhan Sadan," the Society's building at Khar. Following is the outline of various activities of this committee.

(a) Surveys of Health and Diet of Middle Class Families have been conducted in Bombay City in 1943, in Bombay suburbs in 1946, 48 and 52, in Ahmedabad in 1953 and in Baroda in 1954. Separate reports have been published for these surveys.

(b) A Survey of incidence of disease in single room tenement in Kalbadevi area has been completed and reported in the Health number of the Journal of the Gujarat Research Society.

(c) Health pamphlets in Gujarati on health, diet and certain diseases incorporating the results of research on each of the subjects have been published. Over 75,000 copies of these have been distributed free of cost through some Women's organisations and sold at very nominal cost to others.

(b) **Health Research Institute** The Society has recently arranged for rendering diagnostic and health services also. The first Free Family Health Centre was started by the Society in Bombay in Parekh House, New Queen's Road with the co-operation of Dr. J. G. Parekh in 1946. Another similar Health Centre was opened at Khar in 1947. This work was for some time suspended for want of adequate funds. However the activity was revived once again in 1960 and it has resulted into a Health Research Institute. The Unichem Laboratories have donated Rs. 3,000 for two years and other necessary laboratory equipment. The chief object of this Institute is to provide a centre combining research and service for the promotion of health and prevention of diseases to those families who are healthconscious and get themselves registered under the scheme, irrespective of restrictions of community, caste, religion, language or colour.

The Centre provides for giving the following services:—

- (i) A periodical health check-up of all the persons in registered families;
- (ii) Laboratory examination of blood, urine, sputum, stool etc.; (iii) Pre-natal and post-natal care of pregnant mothers; (iv) Health examination, care and advice for the infant and children; (v) Free distribution of vitamins, milk etc.; (vi) Family planning advice; (vii) Instructions and education for maintenance of Health; (viii) Immunization service against diseases; (ix) Free services of an experienced medical social worker visiting at homes; (x) Research on different causes of sickness and their prevention.

Over 250 families have been registered upto now and the work is being carried out by a band of voluntary doctors with the help of the employed staff.

(e) Besides these, other problems such as (i) Health of Gujarati children, (ii) Weight of Gujarati children at birth, (iii) Post-natal studies of children and their mothers, (iv) Health of Harijan families of Khar, etc. have been studied by the enthusiastic workers of the Society, and results have been published in the Journal.

(f) The Institute has recently undertaken a Socio-Health survey of a village named Naulli Agripada which is situated near the Institute. It is proposed to survey about 250 families of the village and social, economical and health problems of the village will be studied. The work is carried on by an expert staff consisting of medical doctors and social workers under the guidance of an expert committee.

(g) **Physical Norms** . The Society has taken great interest in human growth. To understand this and to establish standard norms of height, weight and chest-girth, two surveys have been conducted so far in the Bombay City itself. In the first survey heights, weights and chest-girths of 1,500 school-going children in the suburbs of Bombay were measured. The report of this survey has been published in 1957. In the second survey the heights, weights and chest-girths of over 15,000 school-going children had been studied. The report of this study has been published in the medical number of the Journal in the year 1960. These studies had been taken up as a part of National Biometric Plan prepared by Shri P. G. Shah.

III. Socio-Economic Studies

(a) **Economic and Agricultural Surveys** : Studies in this field of knowledge have been carried out with interest and enthusiasm by the various workers of the Society and the publications in Gujarati on "Economic Life in a Gujarat Village" "A Socio-Economic Survey of Mehsana District" and "Rural Economy of Gujarat" have been well appreciated.

(b) **Tribal Research Unit** : On the death of Shri Thakkar Bapa, a Special

Commemoration Volume was published and a fund was created for the Study of the Social, Economic and Cultural life of the tribes of Gujarat. Dr. Majmudar of Lucknow was invited for the study of the Bhils in 1943. A scholar Dr. T. B. Naik was given grant for some years for the study of Bhils and his thesis on Bhils was published by the Adivasi Seva Sangh of Delhi. A racial, serological and health survey of Maha-Gujarat entrusted to Dr. Majmudar was published in 1946. The work was further expanded and special Tribal Research Unit was established with the aid of the Government in January, 1955. A local study with the help of well equipped staff, Camera, a Tape-recorder, a Cine-camera and Anthropometrical instruments, has been undertaken for the various tribes such as the Dublas, the Naikas-Naikdas, the Gamits and the Dhankas. A book on Dublas of Gujarat and the other on 'Naikas-Naikdas' by Shri P. G. Shah have already been published. The study of the Gamits and of Dhankas is under progress and will soon be completed.

IV. Psychological Research Institute

Psychological and Education Committee began its work in 1936, under the presidentship of Shrimati Dr. Hansabehn Mehta and several research papers on education, testing etc. were published in 1941 and 1943.

A scheme of the Psychological Research Institute was framed by Shri P. G. Shah, the then President of the Society in July 1954 with the help of an advisory board. It started its work in July 1954, with four units, viz.: (1) The Unit working on the psychological tests of abilities and achievements of children and persons at each age level based on a large variety of properly selected samples, (2) A Vocational Guidance and Educational Guidance Unit for Pre-S. S. C. and S. S. C. students and for others; (3) A Juvenile Service Unit including a clinic for maladjusted and backward children; (4) A research training department for students preparing for M. Ed. and Ph. D. degree of Bombay University.

(a) Test Construction Department of the Institute has been busy constructing Psychological and Educational Tests of both ability and achievement, though the Society had shown interest in psychological tests as far back as 1943 when an effort was made to prepare an Individual Scale for measuring the intelligence of Gujarati-speaking children in the city of Bombay.

(1) Since 1954 the following tests have been ready —

1. A group tests for measuring intelligence of Gujarati children by Shri A. J. Joshi
2. Vocabulary test by Dr. N. P. Dave
3. Reading and Comprehension test by Dr. N. P. Dave
4. Arithmetic Ability test by Dr. N. P. Dave

5. Mechanical Comprehension Test

6. Abstract Reasoning test

The following tests are under progress :—

1. Clerical Aptitude test, 2. Interest Inventory

(2) This unit has also prepared local norms for the City of Bombay for various foreign as well as Indian tests, some of which are as follows :—

1. D. A. T. Abstract Reasoning tests

2. Minnesota Paper Form Board test

3. Dr. K. G. Desai's Group test of intelligence

All these tests are used with advantage by the Vocational Guidance Department of the Institute and other interested agencies.

(3) **Achievement tests** : This is one of the biggest and most interesting activities of this Department at present. The Government of India have sanctioned a special grant for three years under which this Department is constructing and standardising Achievement Tests in Gujarati for all the subjects taught in Standards V, VI and VII based on the Syllabus prescribed by the Education Department of Bombay State. About 18 tests are almost ready and a report embodying the results will be soon ready for submission to the Ministry of Education, Government of India. These tests form a part of reforms to be introduced in the present essay type examination.

(4) **Testing Service Unit** : This department offers its services to schools to find out I. Qs. and aptitude of their children at a very nominal rate. It is a matter of gratification that schools have started taking advantage of the service of this Unit. More than 2000 children have been tested by this unit up to now.

(b) **Vocational Guidance Department** : With a view to help students in the proper selection of a vocation and of suitable courses of study in the present days when this has become a great problem to both the students and their parents and guardians, this department was started in 1954. The guidance work of this department is appreciated both by the school authorities as well as the parents of children that take the advantage of this guidance service. The demand from schools as well as from individuals has been ever increasing and it has not been possible for the Institute to meet with this increasing demand due to the limited available finances for the department. By now, over 5,000 students have taken advantage of individual guidance and over 5,000 students have taken advantage of group guidance. The data thus collected will be useful for research purposes also. Research is being conducted in this department with the object of improving and standardising the tests and the methods used in vocational guidance.

(c) **The Child Guidance Clinic and Research Centre** : The clinic formally opened in March 1956, is conducted with the help of an expert staff consisting

ting of a Psychiatric Social Worker and Psychologists It is well equipped with all the requirements for Playtherapy, Psychotherapy and group therapy etc. Children are submitted to psychological testing before the guidance is imparted. Visit to parents at home and to the school authorities at schools form a special future of the clinic. It has been recently expanded into Research and Development Centre, and some research problems such as (1) "Rode of over-protection in connection with the behaviour problems of children", (2) "Effect of Marital Disharmony on children" and (3) An analysis of 25 case histories of normally intelligent children with Deterioration in Academic Perfomance have been undertaken. The report of one such problem is published in the Psychological Number of Journal in January 1962.

Following is a summary of work done by the clinic since its beginning in 1956:

Year	No. of new cases admitted	No. discharged	Balance carried forward to next year
1956-57	101	70	31
1958	74	52	53
1959	78	98	33
	fees	started to means	as above Rs. 200 p. m.
1960	47	57	23
1961	54	57	20

Thus in all 354 cases have been admitted and 334 cases have been discharged after treatment Through child, as the clinic works with the child's total environment, parents and other members of the family have also perfectly taken the advantage of the clinic through individual group. Thus the clinic has catered its service to about 1,000 to 1,500 persons. Cases treated at the clinic have improved to a very great extent. Moreover periodical follow up to the cases treated also indicate that improvement is either maintained or increased.

(d) Industrial Unit This was a unit started by the Institute in 1959 in which tests are being constructed for measuring the Aptitudes of Supervisors which will ultimately help the managements in the selection of proper supervisors. Norms for another test known as 'Finger Dexterity Test' are also being worked out. An humble beginning has been made for both these tests in a factory in the Western suburb of Bombay. This unit had been assigned a project on "Labour-management relation in some six factories on the western suburbs of Bombay" by the Research Programme Committee of the Planning Commission of Government of India. The project is completed and its report is submitted to the R. P. C.

(e) Post-Graduate Teaching Department . The University of Bombay had recognised this Institute for guiding the post-graduate students in Education for

M. Ed. and Ph. D. degrees by research in June 1958. Dr. N. N. Shukla, Director of the Institute, whose services have been procured from the Baroda University and two honorary Directors, Dr. M. P. Vaidya and Dr. (Mrs) M. R. Shah have been recognised as University Professors and guides for this purpose. 17 students are working for Ph. D. degree and 8 students have been working for M. Ed. by papers. They have been working on various research problems

The S. N. D. T. University has recognised the same three teachers of the Institute for guiding the post-graduate research students preparing for M. Ed. degree. Dr. N. N. Shukla, Director of this Institute, was invited to deliver Lectures in Psychology to the M. A. class of the University.

V. Laboratories

(a) The Psychological Laboratory is well equipped with Psychological apparatus of importance and use. A large variety of standard Psychological and Educational Tests useful for further experiments have been collected here. A qualified person is in charge of this laboratory.

(b) Social Research Laboratory for the purpose of Social Research Unit now has (1) A set of Anthropometric instruments, (2) Movie Camera, (3) Camera, (4) Anthropometer, (5) Battery operated Tape-Recorder.

(c) Pathological Laboratory has been built up this year and is connected with the family Health Research Institute, started in the Society's new building. A trained person who examines urine, blood, sputum, stool, etc. is in charge of this laboratory.

Ahmedabad-Branch

Ahmedabad branch began functioning from 12th March 1961 and is progressing modestly and slowly.

The Ahmedabad Branch is extending its activities in health research by taking up problems like infant mortality in Ahmedabad City and a linguistic study of dialects of Gujarat State.

(1) Health Research Institute

This Institute was inaugurated on 23rd July, 1961 by Hon'ble Finance Minister Shri Morarji Desai. Its activities are guided by the Medical Committee.

The Institute has undertaken mainly three research activities during its first year after inauguration. These are :

1. Family health study programme
2. Dietary Survey of 100 families registered by the Institute
3. Collection of data regarding the cases of mortality of children below 5 years of age in the City of Ahmedabad, during a period of one year

(2) Linguistic Department

During the year 1961-62 the department undertook the work of translating the Linguistic Survey of India, Vol. IX, part III on Bhili Languages. Half of the work was finished at the end of March, 1962. It will be completed in the year 1962-63. Over and above this work of Linguistic Geography of the Gujarat

State was undertaken. Dr. T. N. Dave, the then Director, paved the primary work and according to his plan Prof. K. K. Shastree, the Hon. director, secured an authentic map of the State published by the Gujarat Government and with its help a fresh map was prepared and was divided in 108 squares of 40 Kms. \times 40 Kms. each in a scale of 1 cm. = 16 Kms, noting more than 108 places of the state to be utilised as centres of Linguistic Survey.

To carry out the work of noting different dialects of the state a questionnaire was also prepared.

Research Schemes

The following Research Schemes were in progress during the Silver Jubilee Year 1961-62.

<i>Scheme</i>	<i>Director</i>	<i>Staff</i>
1. Evaluation of the Multi-purpose project at Dharampur	Shri P. G. Shah	Dr. B. S. Rege
2. Analytical study of changes in the cultural life of Gujarat with special reference to Dhanka Tribe	Shri P. G. Shah	Dr. B. S. Rege Mrs. Tara Goradia
3. Socio-economic study of the Waghris of Ahmedabad and Kaira Districts	Shri P. G. Shah	Shri S. M. Rawal
4. Construction and standardisation of achievement tests for children in secondary school-classes V to VII	Dr. (Mrs) M. R. Shah Dr. N. N. Shukla	Shri R. B. Naik Miss P. R. Adhvaryu Miss B. V. Ghaswala Mrs. J. K. Munshi Miss C. K. Mehta
5. Intelligence Testing of Adivasi children	Shri P. G. Shah	Shri R. B. Naik
6. Physical growth, physical efficiency and intelligence Testing	Dr. (Mrs) M. R. Shah Dr. N. N. Shukla	In collaboration with Demographic training and Research Centre, Bombay
7. Problem of Juvenile Delinquency in Greater Bombay	Dr. (Miss) Hansa Sheth Dr. (Mrs.) M. R. Shah	Shri K. G. Dighe Shri C. T. Kanan Miss N. Bhatia
8. Health and Socio-economic Survey of Nauli Agripada Village	Dr. B. B. Yodh Shri P. G. Shah Prof. Dr. D. N. Pai	Shri S. D. Krishnan Dr. (Miss) Paradkar Dr. (Mrs.) S. B. Sirsat Miss V. C. Chhatrapati
9. Case studies in Industrial Relations	Dr. S. D. Punekar Dr. N. N. Shukla Dr. D. T. Lakdawala Shri P. G. Shah	Shri Y. Ramaswamy Shri D. S. Parghi Shri M. G. Ashar Shri R. Vishwanath

10. Studies of Incentive Schemes and Methods of Wage Payment in Selected Industries Dr. S. D. Punekar Shri Y. Ramaswamy
Shri D. S. Parghi
Miss M. M. Kothari
Miss V. P. Prabhu
Shri B. G. Padbidri
Shri N. S. Rangari
Miss S. V. Samant
Miss T. D'Souza
11. Linguistic Study of the dialects of Gujarat Prof. K. K. Shastree Shri K. A. Bhavsar
12. Family Health Survey of selected families in Ahmedabad Dr. C. I. Jhala Dr. A. N. Bhatt
Prof. Dr. M. L. Rawal Dr. S. J. Shah
13. Dietary Survey of Selected families in Ahmedabad Dr. C. I. Jhala Dr. A. N. Bhatt
Shri B. D. Mankad
14. Psychological Research Institute— Post-graduate Department Dr. (Mrs.) M. R. Shah (9 Ph. D, and 20
Dr. M. P. Vaidya M. Ed. students)
Dr. N. N. Shukla
15. Mortality Survey of children below 5 years in Ahmedabad City Dr. C. I. Jhala Dr. A. N. Bhatt
Shri B. K. Mehta
16. Subscription of lime for cement in construction Shri K. M. Kantawala (*Ad. Hoc*)
17. Study of Vegetable supply for the City of Ahmedabad Prof. H. N. Pathak (*Ad. Hoc*)

GUJARATI SAHITYA PARISHAD, AHMEDABAD

The Gujarati Sahitya Parishad was established in 1905 through the pioneering efforts of Ranjitram Vavabhai Mehta. Govardhanram Tripathi was its first President. Great savants of Gujarati literature have since presided over its sessions, which have been held in various cultural centres of Gujarat-sometimes outside Gujarat as well. The Parishad is looked upon as the only co-ordinating literary association throughout Gujarat and has remained a form as well as a clearing centre of literary efforts through its resolutions, directional pursuits and publications. It has effectively helped researches in various aspects of Gujarati language and literature. The printed reports of its sessions numbering so far in all 20 embody fruits of research activities on the part of distinguished literary workers and scholars. They contain research articles submitted by critics and scholars over and above learned presidential addresses.

The Parishad has published over and above the following works possessing high research value :

1. Aitihasika Samshodhana by D. K. Shastri
2. Panchatantra-critical Gujarati translation edited by Dr. B. J. Sandesara
3. Premanandana Kavyo ed. by Prof. K. K. Shastri and Miss C. J. Divatia

The Parishad has intermittently published its periodicals containing articles of critical and research value. Thus "Gujarati Sahitya Parishad Patrika" and the current "Parab" quarterly have been instrumental in bringing to light rich research material pertaining to Gujarati language and literature.

GUJARAT SAHITYA SABHA-AHMEDABAD

The Sabha came into existence in the year 1898, but in the year 1904 April it changed its old name "The Social & Literary Association" and the man who gave birth to this Sabha-Shri Ranjitrām Vavabhai Mehta, gave it a new name and from then and onwards it is known as "Gujarat Sahitya Sabha-Ahmedabad"

It is worth nothing that the Gujarati Sahitya Parishad-All Gujarat Gujarati Literary Conference" is an off-sprout of this Sabha.

The Sabha's activities are as under and the same have become well-known through out Gujarat and the Gujarati speaking public for their quiet services to Gujarat and its culture.

1. The Sabha gets prepare every year, the critical review of Gujarati books published during the year by a learned and well-known critic, and it is published every year as transactions of the Sabha in a book form. These yearly reviews have become very known and valuable amongst students, professors and universities and are being widely used. These have established a literary prestige all their own.

2. In memory of the founder of the Sabha-late Shri Ranjitrām Vavabhai Mehta, a Gold Medal is being given away every year to the creator of an original work which helps the culture and genius of Gujarat. This gold medal and the recognition one gets are held in very high esteem.

3. Under the auspices of Sabha lectures and discussions by literary, learned and distinguished persons and visitors are held during the year. This gives the public a unique and great advantage of hearing and knowing the views of distinguished visitors who visit the City as also of the literary and learned persons.

4. Tours and trips are arranged during the year to the places of historical and literary interest. These are conducted under the guidance of persons who are considered authorities in the subject.

5. Research being its chief goal, the Sabha is publishing a series, called the historical Towns of Gujarat and in this way it is giving the History of Gujarat through the history of its historical towns. Under this series the following books are published by the Sabha .

1. Gujarat-nu-Patnagar, Ahmedabad (Ahmedabad, the Capital of Gujarat)
2. Khambhat (Cambay)
3. Somnath
4. Gujarat-ni-Aitihasik Samagri (The materials for the history of Gujarat)
5. Gujarat-nu-Vahanvatu (Shipping in Gujarat)
6. Shah-Alam
7. Jetalpur
8. Shah-i-Bag

Another series is also published by the Sabha known as the Poets of Gujarat, their biographies, their prose and their poetry. The following books are published in this series :

1. Veer Narmad
2. Narmad-nu-Gadya-Mandir (The Prose of Narmad)
3. Narmad-nu-Padya-Mandir (The Poetry of Narmad)
4. Klanta-Kavi (The Poetry of Poet-Balashanker Kantharia)

Others are under preparation.

In this way, in short the honour and privilege of keeping the quiet flow of literary activities continuously flowing has fallen to the lot of Gujarat Sahitya Sabha and it has been discharging this honoured duty with great credit and grace.

GUJARAT VIDYA SABHA & B. J. INSTITUTE OF LEARNING AND RESEARCH, AHMEDABAD

Gujarat Vidya Sabha formerly known as Gujarat Vernacular Society was founded by Alexander Kinlock Forbes in 1848 A. D. with the object to promote and develop Gujarati Language and Literature and Education. The research work being carried on in the Institution has received All India recognition.

The Institution has published more than 700 works including a number of research publications on various subjects. Every year it arranges lecture-series of great-scholars. It also publishes a Gujarati monthly 'Buddhi Prakash' from its beginning.

The Institution has created several other institutions namely Shree Bhola-bhai Jeshingbhai Institute of Learning and Research, R. B. Ranchhodlal Chhotalal Girl's High School, Harivallabhdas Kalidas Arts College, Natya Vidya-Mandir, Shree Ramanand Vidya-Vibhag, Bhagaata Department, Research Museum, Brapmachari Wadi Sanskrit College etc; all integrally linked up together.

(1) B. J. Institute of Learning and Research

This Institute came into existence in 1939 A. D. and was named as above

in 1945 A. D. with the object and aim to promote and develop study and research in Ancient Indian Culture, Gujarati Language and Literature and Sanskrit Language and Literature. It is recognised by the Gujarat University for the degree of Ph. D. in Ancient Indian Culture, Sanskrit, Gujarati and Persian. At present there are 28 Ph. D. students working on.

In sanskrit (1) The Origin and Development of Theory of Vyanjana in Sanskrit Poetics, (2) Anumana in Major Vedic, Buddhist and Jain Darshanas, (3) The Plays of Ramchandra, (4) Dharmakirti and Akalanka, (5) Sarvagnatma Muni's Sharirak-A critical study, (6) A critical study of Sabdanusasana of Hemachandra, (7) A study of literary and cultural aspects of Sanskrit Inscriptions of North India from 150 A. D. to 1300 A. D., (8) Contribution of Uddyotakara to the development of Nyaya System of Thought, (9) Bharatiya Samana Nakshatra-Vibhagana Simabinduonī Atibhasik Samalochana, (10) Vedanga Jyotishane Aryabhata Pahelani Vachchena Samayma Bharatiya Jyotishsastrani Sthiti.

In Ancient Indian Culture (1) A study of Bharata's Natya Sastra as a source of Tradition regarding play-acting and play-writing and other social and cultural matters, (2) A study of the art of painting in Ancient India based upon important Sanskrit, Pali and Prakrit texts on chitra and important old Indian paintings including the Rajput School, (3) A critical study of the Cheda sutras of the Jaina Agamas and the cultural data that they yield, (4) A historical survey of the structural temples in Gujarat upto 1600 A. D. with special reference to the architectural canons discussed in them, (5) The cultural history of Vaghela Period, (6) The religious and social status of Bharat in the times of Shri Harsha, (7) The origin and the form of Shaiva Dharma in Gujarat, (8) The development of Nagari Script in Gujarat upto 1500 A. D. (9) Gujarat in the times of Kshatrapas: History and culture, (10) A critical study of the Epical and Puranic Tradition of the Yadava Dynasties.

In Gujarati (1) The Development of Post-Apabhhrasha language, (2) The background of Akha's Poetry and his literary importance, (3) The treatment of Nature in Gujarati Literature of Rasayuga, (4) The development of the story of Hansavali in Gujarati Literature, (5) The comparative study of the Hindi and Gujarati historical novels written upto 1920 A. D., (6) The form of Vagadi Dialect and Its Comparative study (already submitted).

In Persian (1) Muslim Saints of Ahmedabad, Patan and Cambay, (2) The Persian Poets who flourished in India during the period of later Mughals from 1707 A. D. to 1857 A. D.

The Institute has a programme to publish the following publications in Gujarati —

1. Gujaratanu Murtividhan by Kanaiyalal B. Dave
2. Guptakalin Kala by Dr. Vasudevsharan Agrawal

3. A critical edition of Dhvanyalok and its translation by Shree Dolarrai Mankad
4. A history of Bharatiya Jyotishshastra by Shanker Balkrishna Dixit, translated by Prof. Harihar P. Bhatt
5. Chhandonusasan edited by Prof. J. T. Parikh
6. Ganadharavad translated by Dr. E. A. Soloman

The following publications are under preparation:—

1. Nyayadarshan translation by Dr. J. S. Jetly
2. Garabis of Bhandas edited by Prof. K. K. Shastree
3. Hansauli, Part II ,, ,,
4. Narsinh Mehta—A study by Prof. K. K. Shastree

(2) Bhagavata Department

The Institute has undertaken the work of preparing a critical edition of Shri-mad Bhagavata. The work is in progress.

(3) Research Museum

The most valuable wealth of the Institution is its research museum. There is a collection of 8886 manuscripts out of which 5821 are in Sanskrit, 2860 in Gujarati and 205 in Persian, Arabi and Urdu. There are also 414 silver coins and 3318 copper coins, 4 copper-plate-grants, 59 idols and 58 pictures of Ragas and Raginis, all of historical importance.

GUJARAT VIDYAPITH, AHMEDABAD

The research activities of Gujarat Vidyapith can be summarised as follows:-

I. Mahadev Desai Samajseva Mahavidyalay :

The students of this Mahavidyalay have to prepare dissertations for the final (Snatak) examination. As a result 249 dissertations have been prepared upto now, which are kept in the library for reference. Most of these dissertations throw light on village-industries and socio-economic problems of the backward classes, scheduled tribes and aborigines of Gujarat. The Vidyapith has a programme to publish standard dissertations. The following have been already published (in Gujarati).—

1. The cow wealth of Gujarat-Kamalapati Shukla
2. Labour Welfare Activities-Hiralal Jariwala
3. The Aborigines of Panchmahals-Jayantilal Malkan
4. The Aborigines of Poshina Pattna-Indubhai Raval

II. Tribal Research Centre :

This centre has been started this year. It works on two fronts : (i) Training

of personnel who are actually working in tribal areas, and (ii) Preparing literature on the problems of various tribes. At present the summaries of (1) the reports of various committees appointed for investigating the problems of aborigines, and (2) the report of Backward class commission are under publication. Formerly the Vidyapith has published (in Gujarati) this type of surveys, viz:

1. The Economic Survey of Village Shertha-Vithaldas Kothari and Zaverbhai Patel
2. The Economic Survey of Matar Taluka-J. C. Kumarappa

III. Dictionary Department :

A revised edition of Sartha Jodani Kosh is under preparation. More than 600 books have been reviewed either for new words or new usages of words.

IV. Department of Encyclopaedia :

The Vidyapith intends to prepare an Encyclopaedia in Gujarati. A list of topics is under preparation.

INSTITUTE OF AGRICULTURE, ANAND

Gujarat is rich in agriculture but there was no institution for imparting training in agriculture and investigate scientific problems pertaining to agriculture and animal husbandry till 1939.

Sardar Vallabhbhai Patel realised the need for research in agriculture and of conveying the results of such research to the farmer. Under his inspiring guidance and through strenuous efforts of Shri K. M. Munshi the Institute of Agriculture at Anand came into existence. They and their colleagues on the Sheth Mansukhlal Chhaganlal Trust and Sheth Munglal Goenka Trust offered Rs. 15 lacs (Rs 9 lacs and Rs 6 lacs respectively) to the Government of Bombay in 1939 for the establishment of (1) Sheth Mansukhlal Chhaganlal Institute of Agriculture, Animal Husbandry and Dairying, and (2) Sheth Munglal Goenka Institute of Animal Nutrition with a view to carry on research and impart education in animal husbandry and dairying, animal genetics, animal nutrition, science and practice of agriculture and interalia to popularise improved methods of agriculture and animal husbandry. The Government of Bombay acquired and handed over to the Institute 800 acres of land at Anand and transferred 2200 acre cattle farm at Chharodi along with 500 heads of pure Kankrej cattle and another 50 acre farm at Surat. Sheth Amritlal Hargovandas donated Rs. 5 lacs for starting the College of Agriculture at the Institute and with a capital grant of Rs 15 lacs given by the then Bombay State, the present Bansilal Amritlal College of Agriculture came into existence in 1947. The educational and research activities of the Institute are varied and the Institute at present, besides these three units, consists of School of Agriculture and Northcote Cattle Farm at Chharodi; Western Regional Animal Nutrition Station, Gram Sevak Training

Centre, Bidi Tobacco Research Station and Indian Dairy Diploma School at Anand; and Athwa Dairy Farm at Surat.

The College is affiliated to Sardar Vallabhbhai Vidyapeeth, Vidyanagar and runs an undergraduate course leading to B. Sc. (Agri.) degree and is also recognised for M. Sc. and Ph. D. degrees in Agriculture and its various branches.

Research Activities

Over 150 papers have been published so far from this Institute and the research work on the following lines is going on.

In the field of Agronomy and Plant Breeding with a view to enhance the yield and quality and to secure early maturity, manurial experiments and cultural practices such as deep versus shallow ploughing, planting distance, methods and time of planting, plant rotation, etc. are conducted. These investigations are confined to bajri, jowar, maize, rice, wheat, kodra, chillies, math, mung, tur, guwar, tobacco and cotton. The findings of the investigations have been published in local Gujarati publications and have been propagated through extension agencies.

In Plant Pathology new diseases of Cosmash, cluster beans, Sesamum, Sanhemp, Desmodium, Dracaena and Blue panicum have been reported. Chitri disease of tobacco, Collectorichum and Fusarium blight of guwar, Phytophthora blight of Sesamum and Fusarium wilt of Cumin have been studied in detail. Control measures for crobanche on tobacco and mango malformation have been worked out.

In Agriculture Entomology researches deal with the control of termites cotton and tobacco pests, the results of which are utilised by the farmers of this tract. Problems on hand are confined to protection of chillies against infestation by insect pests and the control of surface grasshoppers on important crops.

Horticulture section has investigated that Rayan root stock is the best for Chiku grafts since it has given the best performance for a number of years. The experiments on the effects of water-regimes on the growth of plants are in progress.

In the field of Agricultural Chemistry and Soil Science an easy and quick method for determining calcium carbonate in soil has been devised. Other research work is confined to the study of manganese status of Gujarat soils, decomposition of nitrite in soils, fixation of phosphate in Gujarati soils, availability of potassium for a crop in the soil, average amounts of nutrients taken by the rice crop and benefits of application of zinc to citrus trees grown in garden soils.

In Agricultural Engineering Section improved implements known as Pipe Hoe, Anand Hoe, Anand Yoke and Anand Cultivator have been prepared and patents have been taken for them. There is a large demand for Anand Hoe by the cultivators in Gujarat, and they are manufactured and sold by the Institute.

In Agricultural Economics research problem studied deal with the method of costing and fixing prices of agricultural produce, working of a mixed co-operative farming society at Gambhira village, the land ownership pattern and size of holdings in villages, types of farming in Gujarat and cost of milk production.

In the field of Animal Husbandry and Dairying research problems worked out so far deal with fat percentage of milk, increasing milk production, methods of preparing ghee, effects of feed on keeping quality of ghee, breeding of bulls and cows and improving the quality of bullocks.

Western Regional Animal Nutrition Centre—This Centre, financed by the Indian council of Agricultural Research, has been established in 1952. A survey work of fodder situation in Kaira District has been carried out and chemical composition of straws of cereal crops, legumes, weeds, tree leaves, vegetable leaves and green fodders is determined and the digestibility trials have been carried out. From these experiments the feeding concentrate mixture against cotton seed has been prepared and supplied to the farmers by Kaira District Co-operative Milk Union. Realising that a saving of Rs. 30 millions can be made in Kaira District alone the Union is going to start a feed factory. Further digestibility trial of feeds and other experiments are going on.

Bidi Tobacco Research Station—The Indian central Tobacco Committee is subsidizing this station since 1951. Research is conducted here for high yielding, better quality and early maturing of tobacco. As a result improved methods of raising tobacco seedlings and cultivation of leaf crop have been evolved. They have been recommended for wide adoption in Kaira and Baroda Districts of Gujarat. Besides this, tobacco seed of improved variety of K20 is produced to the extent of about 10000 kgms, and supplied to the growers in Gujarat. Also seedlings of the improved strain k20 are supplied to the needy farmers at reasonable rate on the guaranteed supply basis every year.

Extension Work—The Institute of Agriculture also does agricultural advisory work, holds demonstrations in improved methods of cultivation, disease and insect control, supplies seeds of improved strains, carries out analytical work in soils, manures, irrigation waters, feeds and insecticides and publishes a Gujarati monthly 'Krushi-Go-vidya' to disseminate knowledge of scientific agriculture among cultivators.

K. M. SCHOOL OF POST-GRADUATE MEDICINE AND RESEARCH, AHMEDABAD

It is a well-known fact that hardly any research was undertaken in medical field in Gujarat twenty years ago. After 1946 things began to alter; medical research was started at many centres. The Ahmedabad Municipal Corporation visualized the importance of medical research and in 1949 K. M. School of Post-graduate Medicine and Research was started in Ahmedabad at the Vadilal

Sarabhai Hospital and Chinai Maternity Hospital. It is affiliated to Gujarat University for M. D. and M. S. degrees. It is also recognised by the Medical Council of India for M. D. (Medicine), M. D. (Midwifery and Gynaecology) and M. S. (General Survey) degrees. Research work in progress or completed in different departments deals with Prevention of Anaemia, Byssinosis, Thermal Stress in Textile Industry, Enteric Fever, Typhoid Fever, Heart Diseases, Cancer, Ulcer, Diabetes, Proteins, Urinary System, Ayurvedic Drugs, Bleeding Disorders, Haemorrhagic Diathesis in Gujarat, etc. The following list of dissertations prepared by various post-graduate students throws more light on the research activities of the Institution :

Medical

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| 1. Cardiovascular System in severe anaemia | Dr. C. S. Joshipura |
| 2. Genesis of Anaemia of Hook worm Disease | Dr. H. C. Barbhaiya |
| 3. Byssinosis | Dr. P. S. Kulkarni |
| 4. The Haemorrhagic Disorders | Dr. K. P. Jetly |
| 5. Observations on Infectious hepatitis | Dr. K. B. Patil |
| 6. Value of stellate Ganglion block in cerebrovascular catastrophes | Dr. Y. P. Desai |
| 7. Observation on the use of prednisone in enteric fever | Dr. H. D. Joshi |
| 8. Initial Control on Hypertension | Dr. B. J. Patel |
| 9. Tetanus | Dr. M. H. Shah |
| 10. Etiology of Congestive Cardiac Failure | Dr. K. L. Shah |
| 11. S. G. O. T. in Liver Diseases- | Dr. B. J. Vasa |
| 12. Heart and Circulation- | Dr. S. G. Munshi |
| 13. Electrophoretic Patterns of Serum Proteins in Ankylostomiasis- | Dr. G. G. Oza |

Surgery

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|---|---------------------|
| 14. Bone Grafting- | Dr. A. B. Patel |
| 15. Observations on Tuberculosis of Hip- | Dr. A. B. Mehta |
| 16. The Treatment of tuberculosis of Spine- | Dr. P. R. Thakore |
| 17. Intra Medullary Nailing- | Dr. R. M. Desai |
| 18. Fractures around the Elbow- | Dr. B. P. Shah |
| 19. Peptic Perforation- | Dr. D. D. Patel |
| 20. Osteoclastoma of Bone- | Dr. S. A. Trivedi |
| 21. Splenectomy- | Dr. P. C. Patel |
| 22. Observation on Gall Bladder Surgery- | Dr. Mahesh C. Desai |
| 23. Treatment of Fractures neck femur- | Dr. P. K. Shah |
| 24. Stone in Urinary Tract- | Dr. S. N. Shah |
| 25. Carcinoma of Tongue- | Dr. P. J. Tripathi |

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| 26. Surgical Treatment of Thyroid Swellings- | Dr. P. M. Desai |
| 27. The Carcinoma of Oesophagus- | Dr. C. B. Bhargava |
| 28. Clinical Review of Delayed and non-Union of Fractures- | Dr. M. D. Pathak |

Gynaec

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| 29. Ectopic-Gestation- | Dr. B. J. Surati |
| 30. Ante-Partum- | Dr. Kala B. Parikh |
| 31. Ectopic-Gestation- | Dr. J. H. Gandhi |
| 32. Placenta Previa- | Dr. S. R. Parikh |
| 33. Rupture of the Uterus as Obstetric complications- | Dr. S. R. Parghi |
| 34. Caesarean Section- | Dr. Nirmala Amin |
| 35. Caesarean Section- | Dr. Kala N. Amin |
| 36. Genital Prolapse- | Dr. Kalindi M. Dave |
| 37. Fibro Uterus- | Dr. A. M. Shah |
| 38. Accidental Haemorrhage- | Dr. K. R. Desai |
| 39. Caesarean Section- | Dr. Kala S. Parikh |
| 40. Functional Uterine Haemorrhage- | Dr. R. N. Banker |
| 41. Pelvic Inflammation- | Dr. K. T. Shah |
| 42. Glutamic Acid- | Dr. V. M. Mehta |
| 43. Ovarian Tumors- | Dr. M. D. Surati |
| 44. Prolapse of the uterus- | Dr. Miss. K.C. Gadari |
| 45. Heart Disease in Pregnancy- | Dr. B. A. Rao |
| 46. Intravenous Pitocindrip in Obstetric- | Dr. S. R. Rajguru |
| 47. A study of Nature of Deliveries following previous Caesarean sections- | Dr. N. M. Patel |

LALBHAI DALPATBHAI BHARATIYA SANSKRITI VIDYA-MANDIR, AHMEDABAD

The Institution was established in 1957 with the objects of making all arrangements for the study and research of all subjects broadly falling under Indology, including languages, literatures, history, philosophy (including Jain, Buddhist and Vedic philosophies), sociology, religion, astrology, astronomy, archaeology, medicine and subjects which may form a part of the cultural heritage of India. It is working in its own building near Gujarat University Campus.

Under the inspiring guidance of Muni Shri Punyavijayaji the Institution has made considerable progress.

(1) **Manuscript Library**—The Institution has 25637 manuscripts in its library. They deal with all the subjects of Indian Culture, Philosophy, Religion and various branches of Secular Literature in Sanskrit, Prakrit, Apabhramsha, Old Gujarati and Old Hindi. During the year 1961-62 the Institution has spent Rs.

16972 in procuring 1506 MSS of various subjects. Some of the important manuscripts are (1) Commentary on Kashika, (2) Nyayakandali Panjika by Rajashekara, (3) Commentary on Meghaduta, (4) Lalitavistara-Panjika, (5) Bhagavata Purana, (6) Ramayana, (7) Kumarsambhava-Panjika, (8) Vidagdha-Mukha-Mandana, (9) Meghaduta (illustrated), (10) Chintamani Subodhika, (11) Shatpadhartha-Prakash, (12) Shalihotradi (with 128 illustrations of horses), (13) Maha-Nataka, (14) Vyayamachitramala, (15) Hayashastra-Bhasha Tika. In addition the Institution has received 875 MSS as present.

(2) Catalogue of Manuscripts—With the grant from the Ministry of Scientific Research and Cultural Affairs, Govt. of India, the Institution prepares the catalogue of 10,000 manuscripts, the printing of which will begin in May, 1962.

(3) Agamic Index—The preparation of the reference cards from the Agamic Texts and their commentaries is completed and the work of compiling the Dictionary of Prakrit Proper Names has already been begun.

(4) Other Research Activities—Under the auspices of the Institution Prof. Nagindas is working on Acharya Dharmakirti and Akalanka and Muni Shri Malayavijayaji has completed the revision of his translation in Gujarati of the Ratnakaravatarika, an important Sanskrit Text on Jain Philosophy. The Institution gives Research Fellowships to deserving candidates in selected subjects.

(5) Publication Programme—On behalf of the Ministry of Scientific Research and Cultural Affairs, Govt. of India, the Institution has a programme of publishing light important Sanskrit and Prakrit texts. The programme is in progress and the following texts have been already given to the press :

(1) Saptapadarthī with the commentary by Jinavardhansuri, (2) Muktiivyakaraṇa by Malayagiri

The Institution has a rich library consisting of 14508 printed books. It has been also recognised by Gujarat University for the Degree of Ph. D. in Sanskrit, Prakrit and Ancient Indian Culture.

LALLUBHAI MOTILAL COLLEGE OF PHARMACY, AHMEDABAD

This College was started in 1947. It is now affiliated to the Gujarat University for the degrees of B. Pharm., M. Pharm, and Ph. D. in Pharmacy. It is equipped with all modern apparatus and machines needed for pharmaceutical work and research. It has so far supplied 800 B. Pharm. and 30 M. Pharm. graduates.

Research work on different aspects of Pharmacy, viz. Pharmaceutical Technology, Pharmaceutical Microbiology, Pharmaceutical Chemistry, Pharmacognosy and Pharmacology is being carried on in various departments of the College under the guidance of Dr. R. P. Patel, Dr. C. S. Shah and Dr. C. R. Mehta. About 60 research papers have been published from the College.

SHRI M. P. SHAH MEDICAL COLLEGE, JAMNAGAR

This College works at Jamnagar and is affiliated to the Gujarat University for the degree of M. B., B. S. Recently there is a good deal of research activity and many research papers on filaria, eczema, blood-pressure, typhoid, etc. have been prepared and published by the enthusiastic members of the staff. The proposed research project of the institution is to work out physiological norms—height, weight, blood pressure and certain medico-social statistics in family study and from hospital data.

PHYSICAL RESEARCH LABORATORY, AHMEDABAD

In 1948, The Ahmedabad Education Society, under an agreement with the Karmakshetra Educational Foundation, took over the Cosmic Ray Laboratory started by Dr. Vikram Sarabhai. The Laboratory was then accommodated in the M. G. Science Institute, and the scope of its activities was expanded by addition of a department of Atmospheric Physics. Prof. K. R. Ramanathan and Dr. Vikram Sarabhai were appointed the first professors in the Laboratory, which was named the Physical Research Laboratory.

Initial research programmes of the Laboratory consisted of a study of the time variations of Cosmic Rays under the direction of Dr. Sarabhai and the study of the upper atmosphere under the direction of Prof. Ramanathan.

The scope of the research programme was further expanded when the necessity of adding a department of theoretical physics, and a full-fledged department for electronics was felt. A request was made to the Atomic Energy Commission of the Government of India of financial assistance for creation of the above departments; this request was agreed to in 1949.

The foundation stone for the present building of the Laboratory was laid by Sir C. V. Raman on February 15, 1952 and the building was formally opened by the Prime Minister and occupied in April 1954. The plot of land on which the building is situated was provided by the Ahmedabad Education Society.

During the last decade the Physical Research Laboratory has carried out extensive investigations on the study of time variations of cosmic rays, which leads to information on the origin, acceleration and modulation of cosmic rays, solargeophysical relationship and inter-planetary magnetic fields. The ozone measurement contributes to our knowledge of atmospheric circulation in the upper troposphere and stratosphere. The characteristics of the ionosphere and its solar control have been studied with a variety of techniques with increasing use of radio astronomy. Investigations on nuclear structure and nuclear forces are carried out by the department of Theoretical Physics.

In addition to the financial and other support provided from the very start by the Ahmedabad Education Society and the Karmakshetra Educational Foundation, the Laboratory has been receiving grants from the Department of Atomic

Energy, Ministry of Scientific Research & Cultural Affairs, Scientific & Industrial Research, the Government of Gujarat and the Gujarat University for various research projects and scholarships.

The National Aeronautics and Space Administration (NASA) of U. S. A. has provided equipment for radio tracking of the satellites, and it has been recently installed on the Laboratory grounds.

The programme of the Laboratory is now being further extended, and it will have the following departments :

1. Cosmic Ray Physics
2. Electronic and Space Physics
3. Solar and Cosmic Radio Astronomy
4. High Atmosphere, Aeronomy and Radio Physics
5. Theoretical Physics, and
6. Theoretical Astrophysics

Further an I. B. M. Electronic Computer will soon be acquired by the Laboratory.

The Laboratory serves as a post-graduate study centre for Physics. It takes up research students and prepares them for the Ph. D. degrees of a number of Universities including the Gujarat University. No fees are charged from the students. All the research students are provided with scholarships or fellowships.

S. B. GARDA COLLEGE AND B. P. BARIA SCIENCE INSTITUTE, NAVSARI : THE DEPARTMENT OF PSYCHOLOGY

The Department was established in 1953 by the late Principal A. K. Trivedi. Upto 1961 it was housed in a small corner room of the college, but now it is working in a separate building, constructed by the magnificent grant of Rs. 1,15,902 from the University Grants Commission. The Department has a separate library, laboratory for Experimental Psychology and Research Laboratory. It has upto date Psychological apparatus worth about Rs. 25000. The Department has also prepared about 24 charts showing the results of various psychological experiments. Uptil now 35 students have secured their Master's Degree and six students have secured their Ph. D. Degree in Psychology from this Department. At present there are about 50 post-graduate students studying Psychology.

The Department has prepared 'Survey of College Students' Attitude towards Marriage' and 'A Study of College Students' Attitude towards Indiscipline.' Now on the anvil it has two research projects, namely (1) Phenomenon of Suicide and Its Prevention, and (2) Drug Addiction (Alcoholism) and Its Prevention.

SHREE TAPI BRAHMACHARYASHRAMA SABHA AND

SHREE O. H. NAZAR AYURVED MAHAVIDYALAYA, SURAT

Medical relief and the prevention of diseases is one of the moral duties of every Government. Even the sages, the honoured, and the rich, who are temperamentally philanthropic, believe that the service of humanity is their uppermost duty. The Ayurved Mahavidyalaya, the attached Ayurvedic Hospital and their present Body—Shree Tapi Brahmacharyashrama Sabha—are founded mainly to serve this very purpose. Uptill now, 203 D. A. S. F., 266 G. F. A. M. & 25 B. A. M. S. graduates have come out of this college. Most of these graduates, by choosing rural areas for their medical career, are catering to the needs of our villages.

Shree Tapi Brahmacharyashrama Sabha is fulfilling the same purpose in other ways also. In addition to Ayurvedic Hospital, the Sabha has been conducting 8 charitable dispensaries in various parts of the city. Moreover, as the result of the same spirit of the public service of the Managing Committee of the said Sabha, an Ayurvedic Pharmacy named “Shri Swami Atmanand Saraswati Ayurvedic Co-operative Pharmacy, Ltd” has been started in Surat. The Pharmacy has its branches and agencies, each guided by expert Vaidyas, in many cities and towns of the State of Gujarat.

The members of the Ayurvedic and the Allopathic staff of the Mahavidyalaya are well-versed in their subject. They have been publishing books and articles in Hindi and Gujarati on various aspects of Ayurvedic treatment. Under the editorship of Principal Shri Bapalal Vaidya, a Gujarati monthly named “Bhishag-Bharati” is also published. The institution has published its own Pharmacopio named “Bheshaj Samhita.”

Shri Tapi Brahmacharyashram Sabha is conducting a Botanical Garden outside the city of Surat.

APPENDX I

Research Work undertaken by various Educational Institutions of the State of Gujarat Dissertations for the Degree of M. Ed.

<i>Sr. No.</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>
1.	A Survey of the Working of Daltonized Basic Schools in Bhavnagar	Bhatt G. P.	Faculty of Edu. and Psy. M. S. Uni. of Baroda, 1955
2.	Public Primary Schools with Special reference to Vagra Taluka of Broach Dist.	Jagtad R. K.	" "
3.	The Role of Central Govt. in Education in India	Gosai P. M.	" " 1956
4.	A study of the Duties and Responsibilites of the District Educational Inspector in Bombay State To-day	Pandya L. M.	" "
5.	A Survey of Secondary Education in the City of Ahmedabad	Garasia B. G.	A. G. Teachers College, Ahmedabad, 1956
6.	Growth of Primary Education in the City of Ahmedabad since 1900	Patel M. T.	" "
7.	A study of Economic condition of women teachers of Sec. Schools in Ahmedabad and its bearing on education	Shah Kum. C.M.	" "
8.	General Survey of the growth of Prim. education among the Harijans in the Dist. of Ahmedabad from 1937	Shah M. M.	" "
9.	A comparative study of the constitution and function of Secondary School Examination Boards in India	Shri Aranhal	" " 1957
10.	Origin and Administration of Extension work in Teachers Training Colleges in India	Patel D. H.	" "
11.	A Study of the Enrolment and attendance in Primary Schools in Baroda	Patel Jayaben M.	" "
12.	Office Records of an Education Inspector	Shah H. M.	" "

<i>Sr. No.</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>
13.	A compatative Study of some Typical Schools in Surat Dist.	Dalal K. J.	F. of Edu. and Psy., M. S. University of Baroda, 1958
14.	History and Progress of Physical Education in India	Desai C. R.	" "
15.	An Inquiry into the Health of School children in Surat Secondary Schools through Medical Inspection Reports	Kathawa P. C.	" "
16.	A study of Economic and Social status of Sec. School teacher in Gujarat	Mehta C. M.	" "
17.	An inquiry into the Education of Aborigines and Hill tribes of Gujarat	M. S. Patel	Govt. Basic Training College, Agatrai, 1958
18.	Careers for women in the city of Ahmedabad who have passed the S S. C. Exam. or its equivalent but are not graduates	Laher Miss M.B.	A.G. Teachers College, Ahmedabad, 1958
19.	An investigation into the practice of self-Govt. in Secondary Schools of Ahmedabad	Shukla K.K.	" "
20.	An Examination of the workload of Graduate (Arts) Trained Teachers of High Schools in the urban area of Gujarat	Dasai J. M.	" , 1959
21.	A comparision of Social Education in Bombay and U. P.	Desai G. T.	" "
22.	A study of the problems of Supervision of Ad. Masters of Sec. Schools in Gujarati	Joshi G. M.	" "
23.	The Study of the Problems of private Sec. Schools	Patel A. B.	" "
24.	The Study of Hygienic conditions of some rural and urbon Sec. Schools in Surat Dist.	Patel G. T.	" , 1960
25.	A comparative Study of Various methods employed for teaching, reading & writing to adult illiterates	Pathak A. J.	Basic Training College Dabaka, 1960

<i>Sr.No.</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>
26.	A study of Curricular of Std, I in the Special reference to activity	Joshi P. U.	H. K. Primary Teachrs Trg. College for Men, Ahmedabad, 1961
27.	A Survey of Balmandirs of Saurashtra	Modi Kum. D. J.	Charshala Basic Training College, Bhavnagar, 1961
28.	A study of the problems faced by a Head Master in a rural school	Patel B. B.	A.G. Teachers College, Ahmedabad, 1961
29.	An investigation into the effect of an emotional attitude on the academic achievement of High School pupils with special reference to Anger	Smt. Jayamma	Faculty of Edu. & Psy., M. S. University of Baroda, 1955
30	Investigation into the effect of the emotional attitude on the academic achievement of the high school pupils with special reference to fear	Kum. Premlata N. G.	" "
31.	Diagnostic Tests in Basic Arithmetic Skills	Shah M. M.	" "
32.	Achievement Test in Arithmetic-Construction and standardisation	Shah N. N.	" "
33.	Investigation into the effect of the emotional attitude on the academic achievement of the high school pupils with special reference to fear	Kum. Premlata N. G.	" " 1956
34.	Progressive Matrices Test (1936 version)-Its applicability to a secondary school	Desai K. A.	" " 1956
35.	Factorial Analysis of Progressive Matrices Test	Shah N. C.	" "
36.	Technique of correlation in Basic Education	Solanki A. B.	Govt. Basic Training College, Kathlal, 1956
37.	An experiment in the methodology of General Science in Stds. VIII to XI	Kum. Mrugavati S.	S. L. U. College for Women, Ahmedabad, 1956 (Thesis for Ph.D)

<i>Sr. No.</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>
38.	The construction and standardisation of a reasoning Test (A group test in Gujarati for Secondary School children)	Dave R. H.	A. G. Teachers College, Ahmedabad, 1966
39.	Construction and standardisation of Achievement test in Science for Std. VIII	Buch M. B.	Faculty of Edu. & Phy, M. S. Uni. of Baroda, 1957
40.	Achievement test in Algebra for Std. VIII	Dave B. M.	" "
41.	Achievement test in Arith. Std. VIII. Construction and standardisation	Desai G. V.	" "
42.	Achievement test in English Std. VIII-Construction and standardisation	Dongre P. K.	" "
43.	Investigation to study human relationships in a secondary school	Thaker R. S	" "
44.	The relation of Intelligence of girls studying in secondary schools of Ahmedabad to their performances at the S. S. C. Exam.	Parekh Kum. V. R.	" "
45.	Achievement Test in History Std. IX-Construction and standardisation	Chaudhary J.M.	Faculty of Edu. & Psy., M. S. University of Baroda, 1958
46.	Achievement test in English Std. IX-Construction and standardisation	Dave P. H.	
47.	Progressive Matrices Test as applied to a group of secondary school-going children in Gujarat	Desai D. B.	" "
48.	Achievement test in Arithmetic Std. VIII-Construction and standardisation	Desai D. K.	" "
49.	Achievement Test in Geography Std. VIII-Construction and standardisation	Desai Smt Sarojini D.	" "
50.	Achievement Test in Geography for Stds. VIII and IX	Kum. Kasad Piloo	" "

<i>Sr. No.</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>	
51.	Achievement Test in Geometry Std. IX-Construction and standardisation	Mahant G. V.	"	"
52.	Achievement Test in Algebra for Std. VIII-Construction and standardisation	Oza A. P.	"	"
53.	Achievement Test in Algebra for Std. VIII-Construction and standardisation	Shah Kum. M. M.	"	"
54.	Achievement Test in History for Std. VIII-Construction and standardisation	Tambe N. G.	"	"
55.	Achievement test in Geometry Std. VIII-Construction and standardisation	Valera C. V.	"	"
56.	Construction and standardisation	Vaishnav M. D.	R.G. Teachers' College, Porbander, 1958	
57.	Adoptation of Desai Group Tests of Intelligence on Primary teachers under training in Gujarat	Choksi A. S.	A G. Teachers' College, Ahmedabad, 1958	
58.	The construction and standardisation for attainment test in Physics for grade X	Patel G. N.	"	"
59.	Construction and standardisation of Group Test of Intelligence	Bhatt R. C.	Faculty of Edu. & Psy. M. S. Uni. of Baroda, 1959	
60.	Achievement Test in History Std. X-Construction and standardisation	Chauhan Smt. D.K.	"	"
61.	Achievement Test in English Std. X-Construction and standardisation	Daruwala Kum. Mehra K.	"	"
62.	Achievement Test in Gen. Science for Std. VIII-Construction and standardisation	Parikh R. C.	"	"
63.	A Review of study habits of pupils of Std. X and teachers role in directing them	Patel B. V.	"	"

<i>Sr. No.</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>	
64.	An attitude scale to measure the attitude of secondary school teachers of Gujarat towards the teaching profession	Patel Kum. Y.F.	"	"
65.	Application of Drawa-man performance Test of City children of Gujarat	Shah N. K.	"	"
66.	Construction of a study habit inventory of High School pupils and with the use of that inventory to survey the study habits of pupils of S. S. C. Class in Secondary Schools of Nadiad	Sheth R. A.	"	"
67.	Social adjustment of adolescents in relation to age, sex, intelligence and achievements	Trivedi C. C.	"	"
68.	Achievement test in Algebra-Std. IX-Construction and standardisation	Vaidya M. R.	"	"
69.	Adoptation of Desai group tests of Intelligence on Primary teachers under training (in Gujarat)	Chowksi A. S.	H. K. Primary Teachers' College for Men, Ahmedabad 1959	
70.	Diagnostic tests in Algebra for Std. IX	Mehta C. C.	A.G.Teachers' College Ahmedabad, 1959	
71.	The construction and standardisation of an attainment test in Physics for grade VIII	Doshi C. J.	"	"
72.	The construction and standardisation of an attainment test in Hygiene for Std. VII	Shah C. G.	"	"
73.	Diagnostic Tests in Algebra for Std. VIII	Trivedi N. R.	A.G.Teachers' College Ahmedabad, 1959	
74.	A Diagnostic Test in Algebra for beginners	Bhagat N. C.	Faculty of Edu. & Psy. M. S. University of Baroda, 1960	
75.	Achievement Test in Gen. Science for Stds. IX and X-Construction and standardisation	Gohil H. B.	"	"

<i>Sr. No</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>
76.	The Standardisation of a Mechanical Aptitude Test	Parikh J. C.	" "
77.	Emotional adjustments of adolescents in relation to Intelligence, sex, and achievement in rural and urban background	Patel M. V.	" "
78.	Family adjustment of Adolescents in relation to age, sex and intelligence	Patel R. N.	" "
79.	Measurements of Attitudes of Secondary Teachers and Principals towards Extension Services	Trivedi V. M.	" "
80.	Achievement Tests in Geometry	Doshi V. H.	Basic Training College, Surendranagar, 1960
81.	Diagnostic Test in Arithmetic for Std. IX (in Gujarati)	Mistry C. C.	A.G. Teachers' College Ahmedabad 1960
82.	The construction and standardisation of an attainment test in Algebra for Grade VIII	Shah Kum. D.A.	" "
83.	Determining local norms for minnesota paper form Board Test	Shah R. P.	" " 1961
84.	Achievement test in History for Std. IX	H. V. Shah	" "
85.	A Linguistic Analysis of English Selection for the S. S. C. Examination of 1959-60-61	Smt. Ghael Urmilla	Faculty of Edu. and Psy, M. S. University of Baroda, 1955
86.	A Critical Inquiry into the existing Text Books in English for Secondary Schools in the State of Bombay	Gor N. A.	" "
87.	An experiment in correlated Teaching in Social Studies in Std. VIII.	Desai S. O.	" " 1956
88.	A Comparative study of the effectiveness of teaching of writing Gujarati alphabets to illiterates	Chokshi S. J.	" "

<i>Sr. No.</i>	<i>Subject¹</i>	<i>Author</i>	<i>Col. and year</i>
89.	Attitude of trained and untrained teachers and Parents towards Basic Education	Purohit J. N.	" "
90.	A critical analysis of the attitude of pupils in the Secondary Schools towards Gujarati poems	Dave J. P.	A.G.Teachers' College, Ahmedabad, 1956
91.	A study of written composition in English of Children of Std. IX of Secondary Schools of Ahmedabad, with special reference to mistakes in spelling	David Smt. S.L.	" "
92.	A study of Arithmetical ability of Primary School teachers under training	Mehta C. M.	" "
93.	A Basic Vocabulary in Gujarati	Parekh B. U.	" "
94.	An Experiment in Social Education in a rural Area	Patel D. D.	" "
95.	A survey of Gujarati Text books of Geography of Stds. V, VII and VIII of the Secondary Schools of Gujarat	Adhvaryu V. B.	" "
96.	An inquiry into Parent teacher relationships in Secondary Schools of Ahmedabad	Bhachech G. B.	" "
97.	A critical revised Guj. Text Books for Secondary Schools pupils of Stds. V to X in Gujarati	Joshi N. P.	" "
98.	An inquiry into the cocurricular activities in the secondary schools of Ahmedabad and suggestions thereon	Riswadkar R. V.	A. G. Teachers' College, Ahmedabad, 1957
99.	An inquiry into the Guj. terminology in Geom. taught in Stds. VIII to IX	Shah R. M.	" "
100.	A plan for teaching General Science in Std. IX through projects	Desai D. V.	Faculty of Edu. & Psy., M. S. University of Baroda, 1958
101.	Plan for teaching Social studies in Std. VIII through projects	Desai Madhu M	" "

<i>Sr.No.</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>
102	A study of co-curricular activities in secondary schools of Baroda	Raijiwala C.B.	" "
103	Pravruti dwara Lekhankarya.	Pandit H. J.	H. K. Primary Training College for Men, Ahmedabad, 1958
104	An inquiry into the Educational books in the secondary schools of Ahmedabad and their use made by teachers (in Gujarat)	Karnik M. B.	A.G.Teachers' College, Ahmedabad, 1958
105	A comparative study of the written composition of pupils of Std. IV taught through activity and without it (in Gujarat)	Pandit H. J.	" "
107.	An investigation into the factors effecting the vocational aspirations of children of grades V, VI and VII in the Secondary Schools of Gujarat	Vora K. V.	A G.Teachers' College, Ahmedabad, 1958
108.	A study of co-curricular activities in rural Secondary Schools in the Kaira District	Amin R. M.	Faculty of Edu. & Psy. M. S. University of Baroda, 1959
109.	A study of the organisation and use of school libraries by the pupils of 11 to 14 in Gujarat	Chokshi Smt. Indu S.	" "
110.	A study of text-books of English in Std. VIII in Bombay State	Nadkarni Aruna	" "
111.	An examination of the methods of teaching and the programme of studies in Agriculture in Higher Secondary Classes	Patel J. D.	" "
112.	A Plan for teaching Hindi in Std. V for schools of Gujarat	Pathak M. A.	" "
113.	An examination of the methods of teaching and programme of studies in Hindi for Gujarati children in Stds. VI and VII	Shroff Kum. Usha K.	" "

<i>Sr. No.</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>
114.	A critical study of Hindi Text Books in the Secondary Schools of Bombay State	Patel P. A.	A.G.Teachers' College, Ahmedabad, 1958
115.	Survey of irregularity of pupils in secondary schools of Ahmedabad	Shukla R. M.	" "
116.	Experimental Determination of mental discipline in some secondary school subjects	Advani A. B.	Faculty of Edu. & Psy., M. S. Uni. of Baroda, 1960
117.	A study of parent teacher relationship in some of the high schools in Baroda with special reference to the actual solution of the problem of discipline and educational backwardness of pupils	Bhatt K. C.	" "
118.	A critical study of the use of Audio-Visual aids in Secondary schools with special reference to some selected schools in Gujarat	Patel J. J.	" "
119.	A comparative study of methods employed for teaching, reading and writing Gujarati to adult illiterates	Pathak A. T.	" "
120.	A study of superior students of standard X of secondary schools of Surat	Shah C. Z.	" "
121.	Gujarati Bhashman Bal Vachan Sahitya	Shah D. R.	" "
122.	A study of Backward pupils of std. X of secondary schools of Baroda	Shah M. S.	" "
123.	A study of Libraries and Reading rooms in secondary schools of Baroda Dist.	Shah S. S.	Faculty of Edu. & Psy., M. S. Uni. of Baroda, 1960
124.	Study in the attitude of teachers towards the structural approach of teaching English in secondary schools	Shastri D. P.	Sorabji J. J. Training College, Surat, 1960

<i>Sr. No.</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>
125.	An investigation into the problems regarding the training of male primary teachers (Guj.)	Naik D. D.	" "
126.	A study of preferences of students for Hindi poetry std. X	Sinha Smt. Sa-roja	Faculty-Edu. any Psy., M. S. Uni. of Baroda, 1960
127.	Problems of correlation in Basic Education	Desai Smt. Ramaben	Stree Adhyapan Man- dir, Ahmedabad, 1991
128.	An evaluation of the existing Primary school syllabus in Gujarat State	Kapadia S. N.	Govt. Basic Trg. Colle- ge, Bhuj, 1961
129.	Causes of failures of Primary teachers at P. T. C. Exam.	Bhatt H. H.	Trainnig College, Dhrangadhra, 1961
130.	To increase vocabulary of the students	Dhru Smt. Sohini	S L. U. College for Women, Ahmedabad, 1961
131.	Reading interests of students in B. Ed.	Kum. Mrugavati S.	" " (Thesis for Ph. D.)
132.	Gujarati Idioms	Bhatt I. M.	Primary Training College, Junagadh, 1961
133.	A study of the problems arising out of correlation of studies in Basic schools	Desai Smt. R. M.	" "
134.	A survey of social Education in the City of Ahmedabad during 1953-60	Pathak B. H.	A.G. Teachers' College, Ahmedabad, 1961
135.	To plan the homework in General Science for std. VIII	Trivedi S. P.	" "
136.	An investigation into the spellings mistakes in Gujarati of pupils of secondary schools	Patel V. M.	("Thesis for "M. Ed.)
137.	Maharaja Sayajirao as an Educationist	Mehta B. C.	Faculty of Edu. & Psy. M. S. University of Baroda, 1955
138.	A comparative study of secondary Education in India and U. S. A. from 1900-1956	Vincent A. M.	P. R. T. College Ahmedabad, 1957 (Thesis for Ph. D.)
139.	The Educational Philosophy of Shri Aurbindo	Depourkar R.T.	Faculty of Edu. & Psy. M. S. Uni. of Baroda, 1958

<i>Sr. No.</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>
140	Education in Gujarat 1857-1947	Rajyagor S. B.	" "
141.	An attitude of tribals of Gujarat towards Education	Patel M. S.	Govt. Basic Trg. College Agatrai, 1959 (Theses for Ph. D.)
142.	Evolution of Philosophy of Education in Modern India	Deopurkar R. T.	R.G. Teachers' College, Porbandar, 1961 (Theses for Ph. D.)
143.	The growth and development of primary Education in Meh-sana Dist. after Independence	Patel N. B.	Basic Training College, Ranuj, 1961
144.	Growth and development of Girls Education in Saurashtra	Patel M. S.	Vikas Adhyapan Man-dir, Wadhwan City, 1961
145.	A critical survey of moral Education from 1835 to 1960	Contractor Kum. D. E.	Sorabji J. J. Training College, Surat, 1961
146	Preliminary Statistical Analysis of Progressive Matrics Test of 1938	Gandhi F. M.	Faculty of Edu. & Psy. M. S. University of Baroda, 1956
147.	Hand writing scale in Gujarati five years to sixteen years	Patel M. M.	" "
141	A study of Film preferences of Adolescents	Bhatt Smt. Hansa J.	" " 1957
149.	A socio-metric study of Friend-ship in schools	Dalal Smt. Pushpa	" "
150.	A study of effectiveness of Advertisements	Munshi R. D.	" " 1958
151.	Standardisation of Study-habits-Inventory	Parikh D. S.	" "
152.	Construction and Standardi-sation of an occupational adjust-ment inventory for adolescents	Wadia Smt. Zarina B.	" "
153.	Standardisation of Youth In-ventory	Raval P. T.	" " 1959
154.	Personality characteristics of Industrial Executives	Patel P. M.	" "
155	An investigation to study the need for educational and vo-cational guidance at High School stage	Shah Smt. Sudha P.	" "

<i>Sr. No.</i>	<i>Subject</i>	<i>Author</i>	<i>Col. and year</i>
156.	Analysis of Phantasies of children	Warty M. S.	Faculty of Edu. & Psy., M. S. University of Baroda, 1959
157.	Parents' attitude towards parent-child relationship and its influence on children's school behavior	Desai Smt. Nileshvari	„ „ 1960
158.	A study of social mobility in Adolescent Boys	Juneja Smt. Santosh	„ „
159.	Comprehension of learning material as a function of visual and auditory presentation	Parlikar R. K.	„ „
160.	An investigation to study imagery, its types and relation to intelligence	Pathak N. S.	„ „
161.	A study of part played by the aggressive tendency of parent of Schizophrenic patients	Shah V. B.	„ „
162.	Efficiency in Serial Rotebarn- ing as a function of visual versus aural presentation of learning material	Shastri A. L.	„ „
163.	The Problem of Indiscipline in the Secondary Schools in the City of Ahmedabad.	Pandya R. C.	A.G Teachers' College, Ahmedabad, 1961

Topics of Dissertations :

- 1 Educational Administration from nos. 1 to 28
2. Educational Messurement and statistics from nos. 29 to 84
3. Educational Methods and Special Fields from nos. 85 to 136
4. History of Education from nos. 137 to 145
5. Psychology from nos. 146 to 163

APPENDIX II

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

List of the Approved Theses for the Degree of Ph. D.

<i>Sr. No.</i>	<i>Title of Thesis</i>	<i>Name of the degree holder</i>	<i>Year of acceptance</i>
Archaeology			
1.	Archaeology of Baroda, Broach and Surat Districts upto 1300 A. D.	Ramanlal N. Mehta	1957
Botany			
2.	Development and Anatomical Studies in vitis with Special reference to its Tendril & Axillary Buds	Jaysukh J. Shah	1957
3.	Embryological Studies in the Family Acanthaceae	Kumari Kunda B. Ambegaokar	1959
4.	Flora of Pavagadh	Gunvant M. Oza	1962
Bio-Chemistry			
6.	A study of the Gastric Response to Digestion and Evacuation Time various Indian Food Preparations	Manmohan L. Pai	1954
6.	Studies on Protein Metabolism—Bio-chemical Changes in experimental Protein Malnutrition	S. G. Kshirasagar	1958
7.	Carbohydrate Metabolism in Citrus fruit tissues with special reference to Biosynthesis of Citric Acid	T. N. Sokharavarma	1959
8.	Studies of Tissue Culture	B. P. Gothoskar	1960
9.	Studies on the Bio-Synthesis of Organic Acids in Garcinia Fruits	V. M. Deshpande	1960
10.	Biosynthesis of Citric Acid in Aspergillus Niger with special reference to C4 Acid Metabolism	Arvind P. Joshi	1960
Chemistry			
11.	Studies in the Chemotherapy of Mycobacterial Infections and of Filariasis	Phiroze S. Wadia	1958
12.	Studies on Chelates and Chelation	A. M. Talati	1959
13.	Studies in Anthracene Derivatives	Sadashiv S. Lele	1961
14.	Synthetic Drugs	Ravindra P. Patel	1961

<i>Sr. No.</i>	<i>Title of Thesis</i>	<i>Name of the degree holder</i>	<i>Year of acceptance</i>
15.	Mixed Liquid Crystals—the effects of structure on the Transition Temperature	J. M. Lohar	1961
16.	Studies in the Hydroxyan-thracene series	N. H. Shah	1961
17.	Studies in Chromones and Flavones	Manubhai V. Shah	1962
18.	Studies in Coumarins	M. G. Patel	1962
19.	Studies in the Synthesis of Dihydroxyquinolines, Diquinolyl Methanes (with U. V. absorption Spectra) and Halogenation of Hydroxyquinolines	G. H. Patel	1962
20.	Studies in Benzo α Pyrones	K. N. Trivedi	1962
Education			
21.	A critical study of the Educational Philosophy of the Upanishads	Shanker M. Divekar	1960
22.	Muslim Education and Learning in Gujarat 1297-1758 A. D.	M. A. Quraishi	1960
23.	Formation, Administration and Standardisation of Reading Tests in Gujarati for Students studying in classes VIII to XI	J. A. Bhagatwala	1960
24.	Construction and Standardisation of a Test of Social Intelligence	M. B. Buch	1960
25.	An aptitude test for secondary school teachers	M. M. Shah	1961
Educational Psychology			
26.	Children's Drawings—A Measure of Intelligence	Shrimati P. Phatak	1956
27.	Construction and Standardisation of Non-verbal group Test of Intelligence with special reference to the Mysore State (the children of age group 7-13)	Miss M. G. Premalatha	1962
28.	Construction and Standardization of an Inventory for predicting Teacher Efficiency	Smt. M. S. Jayamma	1962
Economics			
29.	Co-operative Movement in India	M. R. Kotdawala	1954

<i>Sr. No</i>	<i>Title of Thesis</i>	<i>Name of the degree holder</i>	<i>Year of acceptance</i>
30.	Agricultural Credit in India	V. Sunder Rajan	1954
31.	Recent Developments in the theory of monetary management	J. H. Adhyaru	1955
32.	Business cycles and its explana- tion in the contemporary econo- mic thought	D. K. Shukla	1959
Gujarati			
33.	The Dialect of Charotar-A Linguistic Study	Bhanuprasad R. Chokshi	1956
34.	A critical edition of Simhasana Batrasi (VS. 1519=1463 A.D) of Malaychandra with a Compara- tive study of the story-cycles of the Simhasana Batrasi mainly in Gujarati Literature	Ranjit M. Patel	1956
35.	A critical edition of the Jnan- Gita (1616 A. D.) of Narahari with a study of the life and work of the author and the tradition of Jnan-Margi poets in old Gujarati Literature	Suresh H. Joshi	1960
36.	A critical edition of Panchadandani Varta of unknown Gujarati prose -writer (before 1682 A.D.)	Somabhai Parekh	1961
37.	The Poet Dayaram-A critical Study	Subhas M. Dave	1962
History			
38.	Baroda's political relations with the Central Government as arising out of Treaties, Engagements and Sanads and other causes with reference to the period 1875-1920	V. K. Chavada	1958
Marathi			
39.	A Critical Survey of 'Autobio- graphies in Modern Marathi Literature	M. G. Dabhade	1961
Philosophy			
40.	Mysticism in Gujarat	K. A. Thakkar	1962

<i>Sr. No.</i>	<i>Title of Thesis</i>	<i>Name of the degree holder</i>	<i>Year of acceptance</i>
Psychology			
41.	A comparative analysis of the relationship between acceptance of self and acceptance of others in four Indian College Student Communities—Hindu, Muslim, Catholic and Zoroastrian	Fustor Joachin	1959
42.	Personality Development in relation to Environment Factors—Survey Comprehensive (Synthetic) Theory, Application and Interpretation	R. M. Shah	1960
43.	A psychological study of factors of Juvenile Delinquency	H. D. Badami	1961
44.	A psychological analysis of Dangs culture (an examination of relationship between culture and personality in Dangs District of Gujarat State)	B. A. Parikh	1962
Political Science			
45.	Conceptions of Individual and Authority in the Political Ideas of Harold J. Laski	R. O. Gupta	1961
Physics			
46.	Optical Studies of growth and Etch features on Crystal surface	J. R. Pandya	1961
47.	Heat Transfer Phenomena	H. S. Desai	1961
Sanskrit			
48.	Kevaladvaita in Gujarati Poetry	Y. J. Tripathi	1953
49.	Critical study of Magha's Sisupalavadha	M. T. Buch	1856
50.	Cultural History from the Matsya Purana	S. G. Kantawala	1959
51.	Origin and Development of Dattatreya Worship in India	Hariprasad S. Joshi	1959
52.	Brahma Purana : A critical Study	Kumari Surabhi H. Trivedi	1960
53.	Ancient Indian Society, Religion and Mythology as depicted in the Markandeya Purana (a critical study)	Smt. Nileshwari Desai	1961

<i>Sr. No.</i>	<i>Title of Thesis</i>	<i>Name of the degree holder</i>	<i>Year of acceptance</i>
54.	Purshottamji-A Study	A. D. Shastri	1961
55.	A critical Appreciation of Soddha- la's Udayasundari-Katha	D. P. Patel	1961
Sociology			
56.	A study of Mehers of Saurashtra	H. R. Trivedi	1956
57.	Social Structure of the Bhils of Ratanmal	Y. V. Surendranath	1956
58.	A Travancore tribe and its problems viz. The Muthuvans of Travancore	Palimootil Thomas	1958
59.	Social Background of the High School Students in Kaira District	A. S. Patel	1960
60.	The Social Background of the students of the M.S.U. of Baroda	B. V. Shah	1960
61.	Religion of three Travancore Tribes	Kumari K. Gnanambal	1961
62.	Caste in Malabar	K. R. Unni	1961
63.	Social Background of High School Students in Baroda District	B. G. Desai	1962
64.	High School Students of Baroda (A Sociographic Study)	Kumari Savitri Shahani	1962
65.	Press and Society-A sociological study with special reference to the nature and growth of Guja- rati Press	R. D. Parikh	1962
66.	The Sociological Background of some Industrial Workers in Baroda City	N. R. Sheth	1962
67.	Social consequences of Industria- lisation and Urbanisation in a Village in South Gujarat with special references to tensions be- tween groups and classes	V. H. Joshi	1962
Statistics			
68.	On certain problems in Multi- variate Analysis (Multicollinea- rity of Means and Power Series Distribution)	Chinubhai G. Khatri	1960
Zoology			
69.	Studies on certain aspects of	Raman V. Shah	1956

<i>Sr. No.</i>	<i>Title of Thesis</i>	<i>Name of the degree holder</i>	<i>Name of acceptance</i>
	the Anatomy and Physiology of reptiles with special reference to the Chelonia		
70.	A study on the structure and Metabolism of the Bird and Bat Flight Muscle	Kumari Dolly Jyoti	1957
71.	Certain aspects of air breathing in Fishes with special reference to Indian Teleosts	M. S. Dubale	1958
72.	Studies on certain aspects of the functional anatomy of the flight muscle (Pectoralis major) of a few representative birds exhibi- ting different modes of flight	R. M. Naik	1959
73.	Studies on certain Enzymes of Skeletal and Cardiac Muscles of Vertebrates with emphasis on lipase	K. S. Scaria	1959
74.	A Histophysiological Study on the Adipose Tissue	Jacob Eapen	1960
75.	Studies in Muscle Physiology	Thomas Iype IP.	
76.	Studies in Physiology of the mus- cle tissue	C. L. Talesara	1961
77.	On certain aspects of the Physio- logy of Insects Muscle	N. M. Bhakthan	1961
78.	A study of the Phosphates, Phos- phateses and certain Inorganic Ions in the Peetoralis muscle of some birds with special reference to that of the Pigeon	S. D. Pishawikar	1952

APPENDIX III

GUJARAT UNIVERSITY, AHMEDABAD

List of the Approved Theses for the Degree of Ph D.

<i>Sr. No.</i>	<i>Title of the Thesis</i>	<i>Name of the degree holder</i>	<i>Year of acceptance</i>
Ancient Indian Culture			
1.	Cultural Data supplied by some of the Sculptures at Patan, Modhera, Taranga & Abu	Harshadbhai A. Majmudar	1957
Chemistry			
2.	Synthetic Antimalarials and Quinoline Derivatives	A. G. Munshi	1953
3.	Studies in Emulsions and Interfacial Tension and Compels Formation	Miss Hemlata J. Kazi	1953
4	Studies in 4-Hydroxy Quinolines and Halogenation of Ethyl B Arylamino Crotonates	B. P. Bangdiwala	1954
5	Studies in Colloidal Arsenic Trisulphide	M. J. Pattani	1954
6.	Studies in Fries Reaction	Arun J Hirabhai	1954
7	Studies in the Synthesis of 4-Hydroxy Quinoline and Bromination of Ethyl B Arylamino and B Unsaturated Esters	Ranjit K. Mapara	1955
8.	Some Reactions of Hyponitrites and Nitrites	V. T. Oza	1955
9	Studies in Chalkones	Chandrakant C Patel	1955
10.	Some Reactions of Hyponitrites and Nitrites	Rajnikant H Thaker	1955
11.	Studies in Heterocyclic compounds	Jagdish I Setalvad	1956
12	Studies of Alkali Soils in North Gujarat	Rasiklal K Shah	1956
13.	Synthesis of Thioureas and Thiobarbiturates	J. P. Trivedi	1958
14.	Studies in Corrossion of Brass	Mahendra N. Desai	1958
15	Studies in Ortho-Hydroxy Coumarones	Parmanand M Shah	1958
16	Chalkones and Related Compounds	Subandhu R. Parikh	1959
17	Ortho-Hydroxy Carbonyl Compounds and Relative Products	Arvindkumar A. Raval	1959

<i>Sr. No.</i>	<i>Title of Thesis</i>	<i>Name of the degree holder</i>	<i>Name of acceptance</i>
18.	Studies on Chalkones and Related Compounds	N. B. Mulchandani	1959
19.	Synthesis of 2-hydroxy Chalkones and Related Compounds and Studies in Fries Re-arrangements	C. M. Christian	1959
20.	Synthetic Anthelmintics and Anticonvulsants	Dilip K. Gange	1960
21.	Studies in Alkali Soils in (Bhal-Nal-Area) Gujarat	J. C. Vora	1960
22.	Studies in Corrossion of Brass	J. D. Talati	1960
23.	Sythesis of Thiazalidones and Related compounds	Bhogilal K. Raval	1961
34.	Studies in the Synthesis of Chalkones and Related compounds and Synthesis of (Substituted Amino) Acridines and 4 Ketoquinazolines	G. S. Patel	1961

Commerce

25.	Size of Cotton Textile-Mills with special refrence to Ahmedabad	Biharilal K. Shah	1954
26.	Cotton Co-operative with special reference to South Gujarat	M. N. Jatake	1958
27.	The Co-operative Movement in Surat	Rajendraprasad N. Bhatt	1959

Economics

28.	Peaceful Industrial Relations-their Philosophy, Science and Technique	Ramchandra J. Soman	1954 (Published)
29.	The Study of Local Finance with special reference to the District Local Boards of Gujarat	Sureshchandra A. Desai	1960
30.	A Critical Survey of Works of Fiction on India and Indian Life written by English Authors	M. T. Chiplonkar	1958
31.	Communication in Literature	R. B. Patankar	1960

Education

32.	The construction and standardi-sation of group Tests of Intelli-gence for Gujarati Pupils of stds. V, VI & VIII	Smt. Champaben Bhatt	1962
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<i>Sr. No.</i>	<i>Title of Thesis</i>	<i>Name of the degree holder</i>	<i>Year of acceptance.</i>
Gujarati			
33.	Gujarati Charitravangamayani Tunki Ruprekha	Upendra R. Bhatt	1958
34.	Kalapi—A Study with special reference of his mind and literature	Indravadan K. Dave	1958
35.	Rachhodbhai Udayram as a dramatist	Satyadev I. Patel	1958
36.	Premanand-Samalna Samayma Loksthiti ane tenu Premanand Samale Potani Krutioma Karavelu Darshan	Induprasad J. Bhatt	1958
37.	Gujarati Varta-Sahityama Parsi Lekhakono Falo	Madhusudan H. Parekh	1958
38.	Tuljaram-Krut Abhimanyu Akhyanani Adhikrut Vachana ane Gujarati Sahityama Abhimanyuni Kathano Vikas	Shivlal T. Jesalpura	1959
39.	Bhalana-na Dasamskandhana Bhavgitoni Adhikrut Vachana ane Tatkalin Gujarati Bhashanu Swarup	Dhirubhai T. Doshi	1959
40.	Nakarna Nalakhyanani Adhikrut Vachana ane Madhyakalin Gujarati Sahityama Nalkathano Vikas	Prahlad V. Patel	1960
41.	1920 Pachhini Gujarati kavitani Sanskrutik Bhumika; Tena Paribalo ne Siddhi	Jayant H. Pathak	1960
42.	Govardhanram-Ek Adhyayan	Ramanlal J. Joshi	1960
43.	Sattarma Shatakna Jain Gujarati Kavio	Vadilal J. Choksi	1961
44.	Gujarati Natya-Sahityano Udbhav ane Vikas	Mahesh H. Chokshi	1962
45.	Vimala-prabhandha	Dhirajlal D. Shah	1962
Mathematics			
46.	A mass particle in a homogeneous cosmological model and its complete conversion into radiation in the scheme of the theory of general relativity	Kanaiyalal B. Shah	1960

<i>Sr. No.</i>	<i>Title of Thesis</i>	<i>Name of the degree holder</i>	<i>Year of acceptance</i>
Persian			
47.	Persian Sources of the History of Muslim India contributed by Hindus	Sumant G. Mehta	1960
Philosophy			
49.	The Evolution of the concepts of Atman & Moksha in the different Systems of Indian Philosophy	Gajanan N Joshi	1954
50.	The Methodology of Major Bhasyas on the Brahmasutra	P. D. Chandratte	1957
51.	The Absolution in Modern Western Philosophy	Keshavlal B. Vyas	1954
Psychology			
52.	The Psychological Contribution of Dr. Sigmund Freud	C. T. Bhopatkar	1957
53.	The Problem of Juvenile Delinquency	A. N. Desai	1959
54.	Psychology in International Problems	Raghunath C. Badwe	1961
Physics			
55.	Studies in Cosmic Rays	Upendra D. Desai	1953
56.	Time Variation of Cosmic Rays at Low Latitudes	Doraswamy Venkateram	1955
57.	Studies of Meteorology	S. V. Venkateswaram	1955
58.	The Nuclear Scattering of High Energy Nucleons	Govindlal Z. Shah	1956
59.	Studies in Cosmic Rays	N. Nerurkar	1957
56.	Studies of the Ionosphere at Ahmedabad	R. G. Rastogi	1957
60.	Studies in Cosmic Rays	P. D. Bhavsar	1958
61.	Studies on Twilight & Atmospheric Ozone	Jitendra V. Dave	1958
62.	Studies in Physics of the Ionosphere in Low Latitude	Kantilal M. Kotadia	1959
63.	The Time Variation of Cosmic Rays at Low Latitude	T. S. Sastry	1959
64.	Studies on Atonospheric Ozones	R. N. Kulkarni	1959
55.	Studies in Cosmic Rays	Satya Prakash	1959
56.	Studies of the Electrical and Optical Properties of Thin Evaporated Films of Copper	Ratnakar S. Adhav	1959

<i>Sr. No.</i>	<i>Title of Thesis</i>	<i>Name of the degree holder</i>	<i>Year of acceptance</i>
67.	Time Variation of Cosmic Rays at Low Latitude	Shakti Prakash Duggal	1959
68.	A Study of Ionospheric Wind-drifts over Ahmedabad	S. Rajagopalan	1959
69.	The Distribution of Electrons in the Ionosphere from Vertical Soundings	R. S. Sreenivasan	1960
70.	A Study of the Time Variation of Cosmic Rays at Low Latitudes with Directional Counter Telescopes	Udipi R. Rao	1960
71.	Studies in Cosmic Rays at Low and Intermediate Latitude	A. H. Bhonsle	1960
72.	Studies in Ionospheric Physics using extra-terrestrial Radio Noise	Rajaram V.	1961
73.	A Study of Daily Variation of Cosmic Rays at Low Latitudes	Razdan Hiralal	1961
74.	Observations of night Air-glow at Mt. Abu. & their discussions	B. S. Dandekar	1962
Politics			
75.	Welfare State	D. H. Sutaria	1957
Sanskrit			
76.	The Samkhya yoga and the Jain Theories of Parinama	Miss Indukala Jhaveri	1953
77.	A Reconstruction of the Original Interpretation of the Manusmṛti	R. S. Betai	1256
78.	An analytical study of earlier Mahakavyas in relation to the Mahakavya definition in Alankara Shāstra	R. G. Asti	1957
79.	Natya-Darpana - A critical study	K. H. Trivedi	1962

Gujarat Research Society

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The Gujarat Research Society

(Registered under Societies Registration Act XXI of 1880
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The objects of the Society are :

- (1) To promote, organise and co-ordinate research in all branches of knowledge.
- (2) To collect and publish accurate information on all subjects relating to the region of Gujarat
- (3) To foster the cultural unity of all persons speaking Gujarati without neglecting the fundamental unity among all Indians
- (4) To train, advise and help qualified students in methods of research
- (5) To collect books, manuscripts and similar objects and arrange for facilities for research by establishing libraries, museums, laboratories, art galleries, etc
- (6) To publish the results of research and to popularise modern knowledge in English, Hindi, Gujarati and other languages referred to in Article 344 (ii) of the Constitution through journals, periodicals, books, lectures, photographs, films, etc
- (7) To provide facilities for social intercourse between persons interested in the cultural development of Gujarat and to foster interrelations between Gujarat and other parts of India.
- (8) To establish branches of the Society in furtherance of the above objects

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॥ श्रीः ॥

अभिजातवंशावतंस—‘महेता’ख्य—श्रीमन्नारायणविबुधात्मज-
भारतान्तर्गत—गुर्जरराज्यमुख्यमन्त्रिपदविभूषित—
परमभारतीय—श्रद्धेय—श्रीजीवराजमहोदयाना-
ममृतजयन्तीमहोत्सवप्रसंगे
‘गुजरात-संशोधनमण्डला’ख्यान्वेषणसमित्या सादरं
सप्रेमार्पणीक्रियमाणम्

॥ अभिनन्दनपत्रम् ॥

अनेकवर्षशतकैः पराधीनत्वशृङ्खला ।
भारतीयजनेष्वासीदात्मस्वत्वविनाशिका ॥ १ ॥
महता विग्रहेणेयमहिंसाशस्त्रधारिणा ।
श्रीमन्मोहनदासेन गान्धिकेन महात्मना ॥ २ ॥
उन्मूलयित्वा महसा स्वातन्त्र्यं देशवासिनाम् ।
अर्पितं परमोत्कर्षसूचकं जगतीतले ॥ ३ ॥
तदिदं भारतं वर्षं सर्वखण्डविभूषणम् ।
जातमादर्शरूपेण जगतीतलवासिनाम् ॥ ४ ॥
अतीतपञ्चानुदशेषु वर्षकेष्विदं महारम्भपरिष्कृतैर्बुधैः ।
ललामभूतं भुवि धर्मशासने संस्थापितं दिव्ययशोभिरङ्कितम्
॥ ५ ॥

राधाकृष्णः प्रमुखोऽस्ति केन्द्रे तत्त्वविदां वरः ।
संस्थापितः कृतयुगो जाने येन कलौ युगे ॥ ६ ॥
सर्वस्वत्यागिनां श्रेष्ठो राष्ट्रायार्पितसर्वकः ।
भारतेऽस्मिन् सदाकालं राष्ट्रसंरक्षणोद्यतः ॥ ७ ॥

अस्माकं श्रीजवाहीरो हीरश्रेष्ठो महत्तमः ।

नेतृमुख्यो वरीवर्ति सन्त्रिणां प्रथमाग्रणीः ॥ ८ ॥

तन्निदेशेन सर्वेषां प्रान्तानां शासने बुधाः ।

रत्नभूता भारतस्य प्रेम्णा लोकान् प्रशामति ॥ ९ ॥

तेषु स्वीयप्रतिभया शैखरीभूतलक्षणः ।

विबुधो जीवराजाख्यो गुर्जरात् शास्ति सांप्रतम् ॥ १० ॥

स्वबुद्धिवैभवेनायं लोकानां हितकाम्यया ।

स्वधमनिरतः श्रीमान् प्रजापालनतत्परः ॥ ११ ॥

लोकाभिरामो रामोऽसावपरोऽस्माकमिष्टकृत् ।

आवालवृद्धमर्वेषां मान्यो मान्यजनप्रियः ॥ १२ ॥

पञ्चसप्ततिवर्षाणां पारं प्राप्तः सुधीरयम् ।

सुयोग्यः सर्वलोकानामभिनन्दनवर्षणे ॥ १३ ॥

तत्प्रसंगं समाहृत्य सर्वदेशनिवासिभिः ।

शास्तुः श्रीजीवराजस्य गुर्जराग्र्येसरस्य च ।

सौख्यप्रार्थनया साकं शुभाशंसनमीर्यते ॥ १४ ॥

वसुविधुखनयनवर्षे (२०१८) विक्रभूपतिवरस्य संशुद्धे ।

‘ईस्वी’-नेत्ररसान्वित-नवैकवर्षे(१९६२)ऽथ जागतिके ।

वेदाष्टाष्टविधुमिते (१८८४) रमणीये शालिवाहने वर्षे ॥ १५ ॥

श्रीगुजरांत विशिष्टं संशोधनमण्डलं निजकम् ।

अभिनन्दनस्य वर्षे प्रेम्णा तस्मिन् करोति सहहर्षम् ।

दीर्घायुः सुखपूर्णो जीयात्सहहंस-जीवराजोऽयम् ॥ १६ ॥

(ता. २९-८-१९६२ ईस्वी)

[शुभाशंसनमिदं रचितं गु. सं. मं. असदावाद-शाखा-
नियामकेन शास्त्रिकाशीरामात्मजाध्यापक-केशवरामशर्मा]

I

THE GREAT EXPECTATIONS - 1937

The Gujarat Research Society was formed in October, 1936 with the object of organising, promoting and co-ordinating research and higher learning in various branches of knowledge, with special reference to Gujarat, Kathiawar and Cutch. A large number of competent scholars in different branches of knowledge, as well as eminent persons interested in the cultural progress of Gujarat, have joined the Society, and it is expected that in due course the co-operation of many other persons will be forthcoming.

The work of the Society is done chiefly with the assistance of Standing Committees on different subjects, who are in charge of the work of co-ordinating and encouraging research in their respective branches. The Council of Management has decided to prepare and publish a bibliographical survey of research work done hitherto in various subjects relating to Gujarat, and the Standing Committees have taken steps to collect the necessary materials. Besides, doing this spade work, the Standing Committees have also under their consideration several schemes of research by competent workers. For example, a study of the height, weight and other measurements of Gujaratis of various communities and ages, and a study of typical diets of Gujarati families are among the subjects which the Committee for Medical Science wants to undertake. To supply an adequate idea of the total Gujarati speaking population, it is necessary to co-ordinate the census material relating to the British Districts with that relating to the Indian States; and before thinking of schemes of economic improvement, a basic study of the Economic Resources of Gujarat is desirable. The Committee on Economics and Commerce has undertaken this work. The study of the formation of alkalis in the Gujarat soils, of bone production in Gujarat and its utilisation as manure, and of other industrial and agricultural subjects is engaging the attention of the respective Committees. The Committee on Education has a series of interesting problems in view, such as Intelligence Tests of Children, and Vocational Bias in Education. While most of these Committees are concerned with current problems, the Committee on History and Culture has planned a series of investigations of historical and cultural value. Among these may be mentioned (a) History of Gujarat from the earliest times to the commencement of the Muslim rule, (b) Transcription, translation and editing of the Persian and Arabic inscriptions to be found in Kathiawar and Gujarat, and (c) Investigations into the Folklore of Gujarat. This Committee has also

been entrusted with the celebration of the centenary of the great Gujarati antiquarian, the late Dr. Bhagwanlal Indraji and the preparation of a Commemoration Volume in that connection.

The foregoing list is merely illustrative of subjects on which the Society at present desires to undertake or promote research. A fuller idea of the schemes in contemplation will be available in the List of Subjects appended.

The resources of the Society are at present confined to the subscription of members. It is not possible with such limited resources to undertake the various schemes of research that have been proposed. Though the Society hopes to utilise existing talent and facilities as far as possible in doing this work, expenditure for suitable assistance in the form of scholarships, honoraria, or grants for out-of-pocket expenses will be required. Besides, expenditure for the publication of the results of research when ready, will also have to be provided for.

If the Society is to perform its task of developing the cultural unity of all communities in Gujarat, and cater for the intellectual needs of a great province, it should be in a position to have adequate resources at its disposal to create and encourage an atmosphere of research, to foster contact between mind and mind, and provide that impetus which the research worker needs to be able to do his best. The cost of rendering financial assistance to research workers and of publishing the results of research, and of providing an adequate library and other equipment, has been estimated by the Society at rupees three lakhs. In course of time, when its work expands, the Society hopes to have a building of its own. The immediate need is to maintain research workers on the thirty problems appended hereto, and for this at least thirty scholarships varying from Rs. 25 to Rs. 100 per month are necessary.

Research is a plant of slow growth. But when it grows it takes deep roots, and whatever is built on it, is built well. It is, therefore, not capable of yielding either immediate or spectacular results. The fruits of research often have an indirect, though sure effect on the lives of human beings, and must be viewed in a broad perspective. By its very nature, research demands the patient work of a large number of qualified persons, and is therefore costly.

If the generous endowments which support research institutions in other countries are taken note of, the appeal of this Society for three lakhs of rupees should be considered modest. The munificent foundations maintained by Rockefeller and Carnegie, or the more recent endowments of Lord Nuffield indicate the direction in which lasting service to human knowledge can be rendered by the public spirited and large hearted citizens of Gujarat and Kathiawar. This is the only institution of its kind for the promotion of higher learning on this side of India, and it is hoped that philanthropists and the

general public of Bombay and Gujarat, will support it with liberal donations and scholarships for the promotion of research in specific subjects in which they are interested.

The Society counts among its life members and advisors, Sir Purshottamdas Thakurdas, Sir Prabhashankar D. Pattani, Sir Rahimtoola M. Chinoy, and Sir Jehangir C. Coyajee. The administration of the Society is vested in a Council of Management consisting of the following :

President : The Hon'ble Mr. Justice H V. Divatia

Vice Presidents : Mr. R. P. Masani, A. B. Dhruva, Dr. Jivaraj N. Mehta, Mr. K. M. Munshi

Members : Mr. V P. Vaidya, Dr K. T. Gajjar, Dr A S. Kalapesi, Mr. G. V. Acharya, Dr. D. G. Vyas, Prof S. M Mehta, Mr. Jaisukhlal K. Mehta

Hon. Treasurer : Mr. P. G. Shah

Honorary General Secretary : Prof. C. N. Vakil.

The Council of Management of this Society in making this appeal assures the public that the management of the funds entrusted to them will be both economical and efficient.

All communications should be addressed to Prof. C. N. Vakil, University Hostel, 79, Queen's Road, Bombay 2.

24th June 1937

SUGGESTED LIST OF SUBJECTS

I. ECONOMICS AND COMMERCE

1. Economic Resources of Gujarat
2. The population of Gujarat
3. An industrial census of Gujarat
4. Trade of Kathiawar Ports
5. Marketing and transport in Gujarat
6. A statistical abstract for the whole of Gujarat, including British Districts and States in Kathiawar.

II MEDICAL SCIENCES

7. A study of the height, weight and other measurements of various communities of Gujaratis, children, students and grown up persons.
8. Survey of the normal diets of different classes of population of Gujarat with a view to detecting defects, if any, and indicating ways of improvement.
9. Study of the standard of physical development of the people of Gujarat of different classes and grades of Society, both men as well

as women, and its relation to their (a) Social customs, (b) environment and economic conditions including climate, occupation etc., (c) diet and the study of the means of improving it.

10. Tuberculosis survey of small areas.
11. Statistics connected with premature maternity, and infant mortality.

III. EDUCATION

12. Intelligence Tests of children from the age of 5 to 15.
13. Investigation into wastage in Education.
14. Problem of Vocational Bias in Education.
15. The problem of Rural Education.
16. Co-ordination of Secondary and Collegiate Education.

IV. HISTORY AND CULTURE

17. Revision of the history of Gujarat from the earliest time to the commencement of Muslim rule.
18. Archaeological, architectural and epigraphical survey of Gujarat.
19. Transcription, translation and edition of the Persian and Arabic inscriptions found in Gujarat.
20. Collection of information relating to old paintings, copperplates, sanads, farmans and other documents of historical value existing in private collections in Gujarat.
21. Investigation into the Folklore of Gujarat.
22. History of the Parsis of Gujarat.

V. PHYSICAL, NATURAL AND AGRICULTURAL SCIENCES

23. A study of alkalinity of the Gujarat soils and the methods of removing the same.
24. Chemical investigation of the constituents of natural plant products of Gujarat, with special reference to medicinally useful indigenous plant products.
25. Extraction of iodine from iodine-containing sea-weeds of Gujarat.
26. Bone production in Gujarat and its utilisation for manure.
27. Study of the phosphate bearing rocks of the Jambughoda State and similar areas
28. Radio activity of the hot water springs and lava flows in Gujarat and near Bombay
29. A study of the causes of the decomposition of Porbunder Stone.
30. A study of the famous Kankrej and Gir breed of cattle with a view to improve and standardise the same.

II

25 Years of Research Service

by

GUJARAT RESEARCH SOCIETY

1936 - 62

1. The proposal to found the Gujarat Research Society made by Shri P. G. Shah at a Special Meeting of some interested Friends, held on 26th September, 1936, in the Forbes Sabha Hall in Bombay and presided by Shri Justice H. V. Divatia was accepted and the constitution worked out. Prof. C. N. Vakil was the first Honorary General Secretary and Shri P.G. Shah was the first Honorary Treasurer. Most of the members of the first Council of Management have remained attached for the last twenty five years to the Institution with unflinching devotion to the advancement of research in the service of humanity.

THE AIMS AND OBJECTS :

2. The aims and the objects of the Society are to promote, organise and co-ordinate research in all branches of knowledge; and to collect and publish accurate data on all subjects relating to Gujarat and outlying areas. In achieving this, it has been careful to leave out the study on problems connected with literature, religious life, and politics but has concentrated on the Scientific problems concerning the health, diet, physical fitness and mental health. It has taken up for study of Socio-economic as well as cultural and regional problems of the people by making regional studies. It also encourages the study of history, culture and linguistics of Gujarat inclusive of Saurashtra and Kutch. While concentrating on regional studies, it believes strongly in the integration and progress of the Indian Nation as a whole and as an important unit in the world. Research knows no limitation of space and region, except those imposed by human and monetary resources.

3. The following is a brief outline of the various activities undertaken by the Society and its achievements since its inception in 1936. These activities have been spread to various branches of knowledge and learning. This has been possible because of the co-operation and team work of the various sub-committees appointed for the purpose.

I. HISTORY, ARCHAEOLOGY AND CULTURE

4. Some of the outstanding activities conducted by a special committee for this section are as follows :

(a) The Celebration of the late Dr. Bhagwanlal Indraji Centenary in 1937 was organised by this Society in Bombay and in other parts of Gujarat by (1) Special Commemoration Volume; (2) the erection of a bronze Statue and locating it in the Library of the Bombay University; (3) naming a street after the Great Scholar in Junagadh, the place where he was born, and in Bombay where he worked and died.

(b) The first Gujarat Prehistoric Expedition in the Sabarmati Valley was organised by this Society in 1941, under Dr. H. D. Sankalia with the co-operation of the late R. B. K. N. Dikshit Brilliant and epoch-making results have been since achieved by them with the discovery of the extension of Indus Valley Culture and also with their work in Narmada Valley

(c) Surveys of National Resources of Gujarat have been conducted from time to time and the following monographs have been already published. "Meteorology of Maha-Gujarat," "Plant Life of Maha-Gujarat," "Animal Life of Maha-Gujarat," "Geological Evaluation of Maha-Gujarat," "Statistical Abstract of Maha-Gujarat," "Linguistic Limits of Maha-Gujarat," "Race Elements in Cultural Gujarat," "The Language of Maha-Gujarat," "Botany of Dang District" and "Birds of Gujarat."

(d) The Centenary of Shri Jayakrishna Indraji, the Great Botanist was celebrated in 1948, in his memory a series of Botanical Surveys in Gujarat including the Dang District have been undertaken, under the supervision of Dr R D Adatia. Two Volumes on Dang, and one on the Plants of Gujarat have been published

As the statue from the University Library is not available in our New Building, a photograph of this scholar of International repute was unveiled in the New Building, Sanshodhan Sadan at Khar on Friday 23rd March 1962 at the hands of Shri Sri Prakasha, Governor of Bombay.

II. HEALTH RESEARCH INSTITUTE

5 The society has been interested in the health problems of the community as a whole and a special committee consisting of eminent doctors of the city had been appointed right in the beginning of the Society. The activities of this committee have developed into the Present Health Research Institute which has been carrying on its activities at "Samshodhan Sadan," the society's building at Khar. Following is the outline of various activities of this committee.

(a) Surveys of Health and Diet of Middle Class Families have been conducted in Bombay City in 1943, in Bombay suburbs in 1946, 48 and 52, in

Ahmedabad in 1953 and in Baroda in 1954. Separate reports have been published for these surveys.

(b) A Survey of incidence of disease in single room tenement in Kalbadevi area has been completed and reported in the Health number of the Journal of the Gujarat Research Society.

(c) Health pamphlets in Gujarati on health, diet and certain diseases incorporating the results of research on each of the subjects have been published. Over 75,000 copies of these have been distributed free of cost through some Women's organisations and sold at very nominal cost to others.

(d) **Health Research Institute** : The Society has recently arranged for rendering diagnostic and health services also. The first Free Family Health Centre was started by the Society in Bombay in Parekh House, New Queen's Road with the co-operation of Dr. J. G. Parekh in 1946. Another similar Health Centre was opened at Khar in 1947. This work was for some time suspended for want of adequate funds. However the activity was revived once again in 1960 and it has resulted into a Health Research Institute. The Unichem Laboratories have donated Rs. 3,000 for two years and other necessary laboratory equipments. The chief object of this Institute is to provide a centre combining research and service for the promotion of health and prevention of disease to those families who are health conscious and get themselves registered under the scheme, irrespective of restrictions of community, caste, religion, language or colour.

The Centre provides for giving the following services :-

(i) A periodical health check-up of all the persons in registered families; (ii) Laboratory examination of blood, urine, sputum, stool etc. (iii) Pre-natal and Post-natal care of pregnant mothers; (iv) Health examination, care and advice for the infant and children; (v) Free distribution of vitamins, milk etc. (vi) Family planning advice; (vii) Instructions and education for maintenance of Health; (viii) Immunization service against diseases; (ix) Free services of an experienced medical social worker visiting at homes; (x) Research on different causes of sickness and their prevention.

Over 250 families have been registered upto now and the work is being carried out by a band of voluntary doctors with the help of the employed staff.

(e) Besides these, other problems such as (i) Health of Gujarati children, (ii) Weight of Gujarati children at birth, (iii) Post-natal studies of children and their mothers (iv) Health of Harijan families of Khar, etc. have been studied by the enthusiastic Workers of the Society, and results have been published in the Journal.

(f) The Institute has recently undertaken a Socio-Health survey of a village named Naulli Agripada which is situated near the Institute. It is proposed to survey about 250 families of the village and social, economical and health problems of the village will be studied. The work is carried on by an expert staff consisting of medical doctors and social workers under the guidance of an expert committee

(g) **Physical Norms** The Society has taken great interest in human growth. To understand this and to establish standard norms of height, weight and chest-girth, two surveys have been conducted so far in the Bombay City itself. In the first survey heights, weights and chest-girths of 1,500 school-going children in the suburbs of Bombay were measured. The report of this survey has been published in 1957. In the second survey the heights, weights and chest-girths of over 15,000 school-going children had been studied. The report of this study has been published in the medical number of the Journal in the year 1960. These studies had been taken up as a part of National Biometric Plan prepared by Shri P. G. Shah.

III. SOCIO-ECONOMIC STUDIES

(a) **Economic and Agricultural Surveys :** Studies in this field of knowledge have been carried out with interest and enthusiasm by the various workers of the Society and the publications in Gujarati on "Economic Life in a Gujarat Village" "A Socio - Economic Survey of Mehsana District" and "Rural Economy of Gujarat" have been well appreciated

(b) **Tribal Research Unit :** On the death of Shri Thakkar Bapa, a Special Commemoration Volume was published and a fund was created for the Study of the Social, Economic and Cultural life of the tribes of Gujarat. Dr. Majmudar of Lucknow was invited for the study of the Bhils in 1943. A scholar Dr. T. B. Naik was given grant for some years for the study of Bhils and his thesis on Bhils was published by the Adivasi Seva Sangh of Delhi. A racial, serological and health survey of Maha-Gujarat entrusted to Dr. Majmudar was published in 1946. The work was further expanded and special Tribal Research Unit was established with the aid of the Government in January, 1955. A local study with the help of well equipped staff, Camera, a Tape-recorder, a Cine-camera and Anthropometrical instruments, has been undertaken for the various tribes such as the Dublas, the Naikas-Naikdas, the Gamits and the Dhankas. A book on Dublas of Gujarat and the other on 'Naikas-Naikdas' by Shri P. G. Shah have already been published. The study of the Gamits and of Dhankas is under progress and will soon be completed

IV. PSYCHOLOGICAL RESEARCH INSTITUTE

Psychological and Education Committee began its work in 1936, under the Presidentship of Shrimati Hansabehn Mehta and several research papers on education, testing etc. were published in 1941 and 1943.

A scheme of the Psychological Research Institute was framed by Shri P. G. Shah, the then President of the Society in July 1954 with the help of an advisory board. It started its work in July 1954, with four units, viz: (1) The Unit working on the Psychological tests of abilities and achievements of children and persons at each age level based on a large variety of properly selected samples; (2) A Vocational Guidance and Educational Guidance Unit for Pre-S S C. and S. S. C. students and for others; (3) A Juvenile Service Unit including a clinic for maladjusted and backward children; (4) A research training department for students preparing for M. Ed. and Ph. D. degrees of Bombay University.

(a) Test Construction Department of the Institute has been busy constructing Psychological and Educational Tests of both ability and achievement, though the Society had shown interest in Psychological tests as far back as 1943 when an effort was made to prepare an Individual-Scale for measuring the intelligence of Gujarati-speaking children in the city of Bombay.

(1) Since 1954 the following tests have been ready :—

1. A group tests for measuring intelligence of Gujarati children by Shri A. J. Joshi,
2. Vocabulary test by Dr. N. P. Dave,
3. Reading and Comprehension test by Dr. N. P. Dave,
4. Arithmetic Ability test by Dr. N. P. Dave,
5. Mechanical Comprehension Test,
6. Abstract Reasoning test.

The following tests are under progress :—

(1) Clerical Aptitude test ; (2) Interest Inventory.

(2) This unit has also prepared local norms for the city of Bombay for various foreign as well as Indian tests, some of which are as follows :—

1. D. A. T. Abstract Reasoning tests,
2. Minnesota Paper Form Board test,
3. Dr. K. G. Desai's Group test of intelligence.

All these tests are used with advantage by the Vocational Guidance Department of the Institute and other interested agencies.

(3) Achievement tests: This is one of the biggest and most interesting activities of this Department at present. The Government of India have sanctioned a special grant for three years under which this Department is constructing and standardising Achievement Tests in Gujarati for all the subjects taught in Standards V, VI and VII based on the Syllabus prescribed by the Education Department of Bombay State. About 18 tests are almost ready and a report embodying the results will be soon ready for submission to the Ministry of Education, Government of India. These tests form a part of reforms to be introduced in the present essay type examination.

(4) Testing Service Unit : This department offers its services to schools to find out I. Qs. and aptitude of their children at a very nominal rate. It

is a matter of gratification that schools have started taking advantage of the service of this Unit. More than 2000 children have been tested by this unit upto now.

(b) **Vocational Guidance Department :** With a view to help students in the proper selection of a vocation and of suitable courses of study in the present days when this has become a great problem to both the students and their parents and guardians, this department was started in 1954. The guidance work of this department is appreciated both by the school authorities as well as the parents of children that take the advantage of this guidance service. The demand from schools as well as from individuals has been ever increasing and it has not been possible for the Institute to meet with this increasing demand due to the limited available finances for the department. By now, over 5,000 students have taken advantage of individual guidance and over 5,000 students have taken advantage of group guidance. The data thus collected will be useful for research purposes also. Research is being conducted in this department with the object of improving and standardising the tests and the methods used in vocational guidance.

(c) **The Child Guidance Clinic and Research Centre :** The clinic formally opened in March 1956, is conducted with the help of an expert staff consisting of a Psychiatrist, a Psychiatric Social Worker and Psychologists. It is well equipped with all the requirements for Play Therapy, Psychotherapy and group therapy etc. Children are submitted to Psychological testing before the guidance is imparted. Visits to parents at home and to the school authorities at schools form a special feature of the clinic. It has been recently expanded into a Research and Development Centre, and some research problems such as (1) "Role of over-protection in connection with the behaviour problems of children" (2) "Effect of Marital Disharmony on children" and (3) An analysis of 25 case-Histories of normally intelligent children with Deterioration in Academic Performance have been undertaken, the report of one such problem is published in the Psychological Number of the Journal in January 1962

Following is a summary of work done by the clinic since its beginning in 1956.

Year	No of new cases admitted	No. discharged	Balance carried forward to next year
1956-57	101	70	31
1958	74	52	53
1959	78	98	33
	fees	started to mean	es above Rs. 200 p m.
1960	47	57	23
1961	54	57	20

Thus in all 354 cases have been admitted and 334 cases have been discharged after treatment. Through child, as the clinic works with the child's total environment, parents and other members of the family have also perfectly taken the advantage of the clinic through individual group. Thus the clinic has catered its service to about 1000 to 1500 persons. Cases treated at the clinic have improved to a very great extent. Moreover periodical follow up to the cases treated also indicate that improvement is either maintained or increased.

(d) Industrial Unit : This was a unit started by the Institute in 1959 in which tests are being constructed for measuring the Aptitudes of Supervisors which will ultimately help the managements in the selection of proper supervisors. Norms for another test known as 'Finger Dexterity Test' are also being worked out. A humble beginning has been made for both these tests in a factory in the Western suburb of Bombay. This unit had been assigned a project on "Labour-management relation in some six factories on the western suburbs of Bombay by the Research Programme Committee of the Planning Commission of Government of India. The project is completed and its report is submitted to the R. P. C.

(e) Post - Graduate Teaching Department : The University of Bombay had recognised this Institute for guiding the post-graduate students in Education for M.Ed. and Ph. D degrees by research in June 1958. Dr. N. N. Shukla, Director of the Institute, whose services have been procured from the Baroda University and two honorary Directors, Dr. M. P. Vaidya and Dr. (Mrs.) M. R. Shah have been recognised as University Professors and guides for this purpose. 17 students are working for Ph. D. degree and 8 students have been working for M. Ed. by papers. They have been working on various research problems.

The S. N. D. T. University has recognised the same three teachers of the Institute for guiding the post-graduate research students preparing for M. Ed. degree. Dr. N. N. Shukla, Director of this Institute, was invited to deliver Lectures in Psychology to the M. A. class of the University.

V. LIBRARY

Library : The Society had started a small reference library right from the start. This has been growing rapidly and it now contains modern books and journals on subjects like Psychology, Education, Test Construction, Statistics, Vocational and Educational Guidance, Sociology, Anthropology and Gujarati Literature. A qualified librarian is in charge of this library.

The Government of Gujarat has sanctioned a special grant of Rs. 10,000 for books on Gujarat for the Library of the Society. This grant has added about 2000 books to the library.

VI. LABORATORIES

(a) The Psychological Laboratory is well equipped with Psychological apparatus of importance and use. A large variety of standard Psychological and Educational Tests useful for further experiments have been collected here. A qualified person is in charge of this laboratory.

(b) Social Research Laboratory for the purpose of Social Research Unit now has (1) A set of Anthropometric instruments, (2) Movie Camera, (3) Camera, (4) Anthropometer, (5) Battery operated Tape-Recorder

(c) Pathological Laboratory has been built up this year and is connected with the family Health Research Institute, started in the Society's new building. A trained person who examines urine, blood, sputum, stool, etc. is in charge of this laboratory.

VII MUSEUM

The Society's museum has made a very small beginning with (a) specimens of Herbaria collected for the plants and seeds from different parts of Gujarat, (b) a few gold, silver and copper coins; (c) specimens of musical instruments, ornaments, dresses, images of tribal gods and goddesses and funeral and other artifacts pertaining to some of the tribes of Gujarat.

An Honorary Curator, Miss Kirtida Contractor is in charge of the Museum. She has presented a photographic of the late Dr. Bhagwanlal Indrajī for which thanks are due to her father.

VIII AHMEDABAD

Ahmedabad branch began functioning from 12th March 1961 and is progressing modestly and slowly.

The Ahmedabad Branch is extending its activities in health research by taking up problems like infant mortality in Ahmedabad city and a linguistic study of Dialects.

(1) HEALTH RESEARCH INSTITUTE

The Institute was started in Sankdi Sheri, Manek Chowk, located in the central part of Ahmedabad city. Now it has been shifted to Jhaveriwad, Ratanpole, which area is also of the same type. The activities of the Institute are guided from time to time by the Medical Committee. The members of the Medical Committee are

Dr. T. B. Patel, Director of Health & Medical Services, Govt of Gujarat, who is also the Chairman of this Committee; Dr. M. D. Desai, Supt., V S Hospital, Ahmedabad, Dr. Sumant M. Shah, Consulting Physician, Gulabbai Hospital, Dr. N. H. Desai, Hon. Physician, Civil Hospital Ahmedabad; Dr. M. L. Rawal, Prof. of Preventive & Social Medicine; Dr. V. H. Thakore, Deputy Director of Public Health Depart-

ment, Govt. of Gujarat; Dr. Mrs. P. Verma, Deputy Director of Public Health, Maternity & Child Welfare Department; Dr. A. N. Bhatt, Jr. Lecturer, Preventive & Social Medicine, B. J. Medical College, Ahmedabad; Dr. C. I. Jhala, Lecturer in Pathology, B. J. Medical College, Ahmedabad, who is also Hon. Secretary of the committee since 1st Nov. 1961. Prof. K. K. Shastree is the Director looking after administrative aspect of the Institute

This Institute was inaugurated on 23rd July, 1961 by Hon'ble Finance Minister Shri Morarjee Desai. The inaugural function was held in the meeting hall of B. D. College. Exhibition giving the broad ideas of the activities of the Institute was held at the time of the inaugural function.

This Institute was started with the ideal of the research activities and the services to be offered in the form of medical check up and advice in the prevention

The Institute has undertaken mainly three research activities during its first year after inauguration. These were :

1. Family health study programme,
2. Dietary Survey of 100 families registered by the Institute,
3. Collection of data regarding the cases of mortality of children below 5 years of age in the city of Ahmedabad, during a period of one year.

We are happy to note that all this work is in full progress.

We had approached the Central Government, and with their full co-operation we have started the family planning work accordingly from 1st September 1962.

(2) LINGUISTIC DEPARTMENT

During the year 1961-62 the department undertook the work of translating the Linguistic Survey of India, Vol. IX, part III on Bhili Languages. Half of the work was finished at the end of March, 1962. It will be completed in the year 1962-63. Over and above this work, the work of Linguistic Geography of the Gujarat State was undertaken. The first work to be done is to prepare a linguistic map of the Gujarat State. Dr. T. N. Dave, the then Director, paved the primary work and according to his plan Prof. K. K. Shastree, the Hon' director, secured an authentic map of the State published by the Gujarat Government and with its help a fresh map was prepared and was divided in 108 squares of 40 Kms. X 40 Kms. each, in a scale of 1 cm. = 16 kms, noting more than 103 places of the state to be utilised as centres of Linguistic Survey.

To carry out the work of noting different dialects of the state a questionnaire was also prepared

(3) LIBRARY

In the year of the Report 581 books worth Rs. 2016-75 were received from our Bombay-Head-Office and thus we have been able to establish a library of rare Gujarati works which will be very useful for Ph D students, who would desire to work at our Ahmedabad Branch.

If suitable funds will be secured, ours is the aim to establish a full-fledged upto-date reference library.

(4) OUR REQUIREMENTS

Work of both these departments are in progress We have approached to the Government of Gujarat and have all hopes to get suitable help. We request the generous merchants and mill-owners of the City of Ahmedabad to donate sufficient sums to fulfil our plans and to have an upto-date building in a free open area on the Ellis Bridge side For Ahmedabad this is not a big thing, and we have full trust in generous people of Ahmedabad.

The following Research Schemes were in progress during the Silver Jubilee Year 1961-62.

<i>Scheme</i>	<i>Director</i>	<i>Staff</i>
1. Evaluation of the Multi-purpose project at Dharampur]	Shri P G Shah	Dr. B S Rege
2. Analytical study of changes in the cultural life of Gujarat with special reference to Dhanka Tribe	Shri P G Shah	Dr B S. Rege Mrs Tara Goradia
3. Socio-economic study of the Waghris of Ahmedabad and Kaira district	Shri P G. Shah	Shri S M Rawal
4. Construction and standardisation of achievement tests for children in secondary school—classes V to VII	Dr (Mrs) M R Shah Dr N N Shukla	Shri R. B Naik Miss P. R Adhvaryu Miss B V Ghaswala Mrs J K. Munshi Miss C K Mehta
5. Intelligence Testing of Adivasi children	Shri P. G Shah	Shri R. B. Naik
6. Physical growth, physical efficiency and intelligence Testing	Dr. (Mrs.) M. R. Shah Dr N N Shukla	In collaboration with Demographic Training and Research Centre, Bombay
7. Problem of Juvenile Delinquency in Greater Bombay	Dr (Miss) Hansa Sheth Dr. (Mrs,) M. R, Shah	Shri K G Dighe Shri C. T Kanan

- | | | |
|---|---|--|
| | | Miss N. Bhatia
Shri S. D. Krishnan |
| 8. Health and Socio-economic Survey of Nagri Agripada Village | Dr. B. B. Yodh
Shri P. G. Shah
Prof. Dr. D. N. Pai | Dr. (Miss) Paradkar
Dr. (Mrs.) S. B. Sirsat
Miss V. C. Chhatrapati |
| 9. Case studies in Industrial Relations | Dr. S. D. Punekar
Dr. N. N. Shukla
Dr. D. T. Lakdawala
Shri P. G. Shah | Shri Y. Ramaswamy
Shri D. S. Parghi
Shri M. G. Ashar
Shri R. Vishwanath |
| 10. Studies of Incentive Schemes and Methods of Wage Payment in Selected Industries | Dr. S. D. Punekar
Dr. D. T. Lakdawala | Shri Y. Ramaswamy
Shri D. S. Parghi
Miss M. M. Kothari
Miss V. P. Prabhu
Shri B. G. Padbidri
Shri N. S. Rangari
Miss S. V. Samant and
Miss T. D'Souza |
| 11. Linguistic Study of the dialects of Gujarat | Prof. R. K. Shastree | Shri K. A. Bhawar |
| 12. Family Health Survey of selected families in Ahmedabad | Dr. C. I. Jhala
Prof. M. L. Rawal | Dr. A. N. Bhatt
Dr. S. J. Shah
Dr. M. S. Mehta
Miss Tembe |
| 13. Dietary Survey of Selected families in Ahmedabad | Dr. C. I. Jhala | Dr. A. N. Bhatt
Shri B. D. Mankad
Miss Tembe |
| 14. Psychological Research Institute—Post-graduate Department | Dr. (Mrs.) M. R. Shah
Dr. M. P. Vaidya
Dr. N. N. Shukla | (9 Ph.D. and 20 M.Ed. students) |
| 15. Mortality Survey of children below 5 years in Ahmedabad City | Dr. C. I. Jhala | Dr. A. N. Bhatt
Miss Hansa Trivedi
Shri B. K. Mehta |
| 16. Substitution of lime for cement in construction | Shri K. M. Kantawala | (Ad Hoc) |
| 17. Study of Vegetable supply for the City of Ahmedabad | Prof. H. N. Pathak | (Ad Hoc). |

III.

THE PREVIOUS CONFERENCES OF RESEARCH WORKERS

When the 4th Conference of Research Workers of Gujarat is being held in connection with the Silver Jubilee Celebrations, it is desirable to review the work of the previous three Conferences.

The First Conference, Bombay :

The First Conference was held at Bombay on 16th and 17th November, 1946 in connection with the tenth anniversary celebrations of the Foundation of the Society at the Bombay University Convocation Hall. The Maharaja of Porbunder, Shri Natwar Singhji, inaugurated the proceedings at the request of the President Shri Harasidhbhai Divatia, the Vice President Shri K. M. Munshi and Mr. Pranlal Devkaran Nanjee.

Delegates had come from outside, the most prominent of whom were Shrimati Vidyaben Nilkanth, President of Gujarat Vernacular Society, Ahmedabad and Shri Ramsingh Rathod from Cutch.

The meeting on the second day of the Conference was presided over by Dewan Bahadur Krishnalal M. Jhaveri. On the side of History, Art and Archeology, the speakers were Shri Durgashankar Shastree, Shri N. C. Mehta, Shrimati Vidyaben Nilkanth, Dr. I. J. S. Taraporewala, Shri R. G. Gyan, Shri P. C. Divanji, Dr. H. D. Sankalia, Shri Amrit Vasant Pandya, Dr. D. G. Vyas and Shri Ramsingh Rathod. Dr. A. R. Kalapesi discussed the geological resources. Prof. N. P. Gandhi, Dr. B. B. Yodhi, Dr. Chamanlal Mehta, Dr. J. G. Parekh, Shri P. G. Shah, Principal K. S. Vakil, Principal J. H. Trivedi, Dr. Jivaraj Mehta, Mr. T. C. Kantawala, Sir Manilal Nanavati, Mr. G. D. Daftari and Dr. D. N. Majmudar discussed and spoke on various topics.

An exhibition was held under the auspices of the Society. Dr. H. D. Sankalia exhibited the finds of the Pre-histric man in Sabarmati Valley. Mr. A. V. Pandya exhibited the Narmada Valley finds. Mr. Salim Ali's collection of Birds of Gujarat surveyed by him in 1945 on behalf of the Gujarat Research Society and over 100 photographs of racial health and variety explored by Dr. D. N. Majmudar were exhibited. Balanced Diet Exhibition was also arranged by Mr. Chamanlal Mehta.

The Committee for co-operation and co-ordination was appointed consisting of D. B. Krishnalal M. Jhaveri, Lady Vidyaben Nilkanth, Shri H. V. Divatia, Shri K. M. Munshi, Shri G. V. Mavalankar, Dr. B. R. Kalapesi, Dr. Manjulal Majmudar and Shri P. G. Shah. The Conference dispersed after a tea party on the University Garden Lawns.

The Second Conference, Ahmedabad :

The Second Conference of Research Workers of Gujarat was held at Ahmedabad on 24th, 25th & 26th January, 1953. The full proceedings of the Conference has been given in the Journal of the Society for October 1952 and January 1953 in about 130 pages.

The Conference was opened with a welcome address by the Mayor Shri Chinubhai Lalbhai followed by the inaugural address by Shri Kasturbhai Lalbhai. This was full of practical suggestions in various directions—historical, industrial and cultural.

The Presidential address by Shri H. V. Divatia, by Dr. D. N. Wadia, F.R.S. on the roll of Minerals in National Reconstruction, by Dr. H. D. Sankalia on Prehistory of Gujarat, by Mr. P. G. Shah on Anthropology and human relations, by Dr. Chamanlal Mehta on Human Resources and Problems of health and medical welfare, by Shri Bhailalbhai Patel on Problems of Road and Irrigation, and by Dr. D. T. Lakdawalla on need of urban surveys were all printed and circulated.

Public lectures by Mr. B. P. Patel on "Problems of Rural Finance," by Dr. D. N. Wadia on "Geological Resources of the Country", by Shri S. R. Rao on "Recent Discovery of Plated Pottery at Amreli" and by Dr. Santapan on "Plants of Western Ghats" were well appreciated.

The Conference was attended by 103 delegates and 343 Registered visitors. Keen interest was evinced and several interesting discussions took place in sectional meetings.

The Conference passed Resolutions to the effect approving a Central Committee to secure co-operation and co-ordination of Research Work pursued by various research Institutions in Gujarat, another to prepare a plan for all round development and progress of Gujarat, and recommended a list of subjects for Research.

The Third Conference, Baroda :

The Third Conference of Research Workers in Gujarat was held at Baroda on 2nd and 3rd November 1957, under the auspices of the Gujarat University and the M. S. University of Baroda. The Vice-Chancellor, Dr. Hansaben Mehta presided over the Conference, which was inaugurated by Dr. K. M. Munshi. Shri H. V. Divatia, Vice-Chancellor of Gujarat University and Shri Bhailalbhai Patel, the Vice-Chancellor of Vallabh Vidyapith, Anand, were present and took important part in the discussion. The Report of the Conference in Gujarati and English is given in the Journal of Gujarat Research Society for January 1958.

The Conference was divided into seven sections with their separate Presidents, (1) Medicine and Public Health—Dr. B. B. Yodh, (2) History, Archeology

& Culture—Shri P. C Divanji; (3) Economics and Agriculture & Planning—Dr. D. T. Lakdawala; (4) Education and Psychology—Dr. L. G. Bhatt; (5) Sociology and Social Welfare—Dr. J. P. Desai; (6) Industrial Research—Shri B. B. Joshi; (7) Fine Arts—Dr. M. B. Bhatt. The addresses of the seven sections were read before the open Conference.

About sixty papers were discussed in Five Sections which met in separate rooms.

Popular lectures were given (1) by Dr. K. M. Munshi on Gujaratnu hadtar, (Planning for Gujarat), (2) by Dr. R. D. Desai on Chemistry and Humanity, (3) by Dr. Y. G. Naik on Past and Future of University.

The Plenary Session at the end was well attended. All the Sectional Presidents gave an account of the proceedings in these sections. As there was a universal desire to continue the work of the Conference, a permanent Committee of 15 members was appointed with a Sub-Committee of the Vice-Chancellors of the three Universities with Mr. P. G. Shah and Dr. C. S. Patel as Convenors.



The Office-bearers of the Society for the current year are as follows :

<i>Designation</i>	<i>Name</i>	<i>Occupation</i>
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Vice Presidents :	Prof. C. N. Vakil	Retired professor of Economics
	Shri H. V. Divatia	Rtd. High Court Judge
	Shri K. M. Munshi	Ex - Governor
	Shri R. G. Saraiya	Chairman of State Transport Service
	Shri B. B. Yodh	Medical Consultant
	Shri M. B. Nanavati	Ex - Deputy Governor, Reserve Bank of India
Hon Gen Secretary :	Dr. D. T. Lakdawala	Professor of Economics, University of Bombay
Hon Jt Secretary :	Dr. C. H. Shah	Reader of Economics, University of Bombay
Hon Treasurer :	Dr. A. S. Kalapesi	Professor of Geology
Hon Jt Treasurer :	Shri B. D. Randeri	Rtd Accounts Officer of Accountant General Office, Bombay

IV

LIST OF MEMBERS OF THE GUJARAT RESEARCH SOCIETY

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19, Stock Exchange
Building, Apollo Street,
Bombay-1. .,

Shri C. K. Marfatia,
10, Sleator Road,
A/39, Ganesh Prasad,
Bombay-7.

Shri R. K. Marfatia,
26, Walkeshwar Road,
Bombay-6.

Smt. S. R. Patadia,
Vinod Kunj,
Telang Road,
G. I. P. Matuanga,
Bombay-19.

Shri M. M. Modi,
Giridhar Niwas,
Raopura, Baroda.

Shri N P Dave,
Prin. M. A High School,
Andheri, Bombay-41.

Shri A. V Pandya,
Director, Institute of Archeology,
Vallabh Vidya Nagar, Anand.

Shri K. P Shah,
14, Rekha Kunj,
Matunga, Bombay-19.

Shri S C Banker,
Scindia House,
Doogall Road,
Ballard Estate, Bombay-1

Shri H L Chandarana,
Post Box 649,
Nairobi, Kenya.

Shri Bhaskar R Shibad,
Motor House, Ltd.,
13, Hughes Road, Bombay-7.

Dr K S. Vakil,
8, Podar Block, Podar St ,
Santa Cruz, Bombay-23.

Shri B. H. Yajnik,
Popla Pole, Nagarwada,
Nadiad (Dist. Kaira)

Shri A. C. Fozdar,
Vinod Villa, 11th Road,
Khar, Bombay-52.

Dr. J. C. Marfatia,
Jaya Mahal, French Bridge,
Bombay-7.

Dr. K. M. Shah,
Shri Niwas,
Sardar Patel Road,
Bombay-4.

Shri Bhanubhai L. Desai,
Dilkhushi, 3, Cross Road,
Poona-1.

Shri R. B. Lotwala,
Ram Bag,
Lam Road, Dhoval,
Nasik.

Shri G. V. Acharya,
Harsad Sandan,
Ganeshfali,
Junagadh.

Dr Chamanlal M. Mehta,
Mehta Block,
2nd Dadiseth Road,
Bombay-7.

Rao Saheb G D. Mehta,
Visnagar.

Shri H. M. Patel,
Vallabh Vidya Nagar,
Anand, Dist Kaira.

Shri Ochhavilal G Shah,
Vakil Building,
Khadia, Char Rasta,
Ahmedabad.

Dr. P. M Sanghvi,
Sir Harkishandas N. Hospital,
Prathana Samaj,
Bombay-4.

Dr. D. D. Vora,
Sion General Hospital,
Sion.

Shri A. K. Trivedi,
Principal, Garda College,
Navsari.

Shri Kishorlal Premchand,
"Parnorama,"
203, Walkeshwar Road,
Bombay-6.

Shri Nandlal Chhaganlal,
Cama Chambers,
23, Medows Street,
Bombay-1.

Dr. V. V. Shah,
Chowpatty Chambers,
Sandhurst Road,
Bombay-1.

Shri Arvindkumar Kilachand,
Bharatex Private Ltd
1st Floor, Mafatlal House,
Backbay Reclamation,
Bombay.

Dr. S. C. Upadhyaya,
Victoria & Albert Museum,
Byculla,
Bombay-8

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Sheth Nahalchand L. High School,
Ghodbundar Road,
Malad, Bombay Suburb.

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1st Floor,
45, Chowpatty Road,
Bombay-7.

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Govt. Teachers Training College,
Ujjain (M. P.)

Dr. B. N. Desai,
173, Ghodbunder Road,
Vile Parle (West),
Bombay-24.

Shri N. A. Yagnik,
Tejpal House,
Bomanji Pett Road,
P. O. Cumbala Hill,
Bombay-26.

Shri D. D. Kapadia,
6, Staunton Road,
Poona-1.

Dr. J. D. Pathak,
Medical College,
Baroda.

Shri H. M. Desai,
Retd. Principal,
Agricultural College,
Desai's Pole,
Matar (Dist. Kaira)

Shri H. T. Bhatt,
Kastur Niwas No. 1,
French Bridge,
Bombay-7.

Shri Chunilal P. Bhatt,
C/o Jeewanlal Ltd.
Liberty Bldg, Marine Line,
P. O. No. 562,
Bombay-2

Shri B. R. Patel,
Managing Director,
State Bank of India,
Bombay-1.

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New Indian Assurance Co.
Mahatma Gandhi Road,
Bombay-1.

Shri K. J. Chitalia,
Member of the Servants of India
Society,
Poona-4.

Shri C. J. Sutaria,
Jogidas Vithal Pole,
Baroda.

Shri K. M. Bhujpuria,
President,
Indian Grain Dealers' Federation,
84/86, Dr. Maheshwari Road,
Bombay-9.

Shri H. C. Sheth,
Mahatma Gandhi Road,
Dahod (Panchmahals)

Shri Haridas Gopaldas,
30, Pali Hill, Bandra,
Bombay-50.

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Makan Kuva,
Godhra.

Shri Jasubhai H. Patel,
Hanuman Bag, Narasingh Gali,
Ghodbandar Road,
Malad (B. S. D.)

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Messrs. Godrej I. Boyce
Mfg. Co. Ltd.
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Shri P. M. Bhatt,
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Bank of India,
Bombay-1.

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Shraddhajali,
Sarohini Road,
Santa Cruz,
Bombay-54.

Kumari Kirtida Y. Contractor,
"Swasraya," Paliram Hill,
Ghodbundar Road,
Andheri, Bombay 41.

Dr. J. F. Bulsara,
81, Wodehouse Road,
Bombay 5.

Dr. F. P. Antia,
Cement House,
121, Queen's Road,
Bombay-1.

Shri H. H. Vaharia,
213, Samuel Street,
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Shri G. B. Soparker,
Suman Vihar,
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ગુજરાત સંશોધન મંડળ

ઈ. સ. ૧૯૩૬-૧૯૬૧

ગત પચીસ વર્ષોનું વિહંગાવલોકન

૧. ૧૯૩૬ની ૨૬મી સપ્ટેમ્બરના એક મંગળ દિવસે મુંબઈની ટ્રોન્સ ગુજરાતી સભાના સભાખંડમાં ન્યાયમૂર્તિ શ્રી. હરિસિદ્ધલાઈ વ. દિવેટિયાના પ્રમુખપદે સંશોધન-ત્રેમી કેટલાક વિદ્વાનોની એક ખાસ સભા મળી હતી તે વખતે શ્રી. પોપટલાલ ગો. શાહે 'ગુજરાત સંશોધન મંડળ'ની સ્થાપના કરવાના વિષયમાં એક દરખાસ્ત મૂકી હતી. આ સભાએ એ દરખાસ્તને વધાવી લીધી હતી અને મંડળના બંધારણને મૂર્ત સ્વરૂપ આપ્યું હતું. પ્રો. ચંદુલાલ ન. વઝીર પહેલા માનાર્હ સામાન્ય મંત્રી થયા અને શ્રી. પોપટલાલ ગો. શાહ પહેલા માનાર્હ કોશાધ્યક્ષ થયા. 'નિયામક સમિતિ' ના મોટા ભાગના સભ્યો માનવસેવાના એક માત્ર સમુદ્દેશથી સંશોધનના વિકાસ તરફના અતૂટ ભક્તિભાવથી સંસ્થાની સાથે છેલ્લાં પચીસ વર્ષથી સંલગ્ન રહ્યા છે.

ઉદ્દેશો અને હેતુઓ

૨. આ મંડળના ઉદ્દેશો અને હેતુઓ જ્ઞાનની સર્વ શાખાઓમાં થતાં સંશોધનોને આગળ વધારવા, વ્યવસ્થિત કરવાં અને એકત્રિત કરવાં, એ સાથે ગુજરાત અને નિકટના પ્રદેશોની સાથે સંબંધ રાખતા સર્વ વિષયોને લગતી મૂળગત યથાતથ સામગ્રી એકઠી કરવી અને પ્રકાશિત કરવી, એ રહ્યા છે. આ સામગ્રી પ્રાપ્ત કરવાને માટે સંસ્થાએ સાહિત્ય ધાર્મિક જીવન અને રાજકારણની સાથે સંબંધ ધરાવતા પ્રશ્નોના અભ્યાસને દર રાખવા સાવધાની રાખી છે અને આરોગ્ય, ખોરાક, શારીરિક સમપ્રમાણતા (norms) તથા માનસિક આરોગ્યને લગતા વૈજ્ઞાનિક પ્રશ્નો ઉપર ધ્યાન કેન્દ્રિત કર્યું છે. એણે પ્રાદેશિક અભ્યાસ સાધીને લોકોના સામાજિક-આર્થિક તેમજ સાંસ્કૃતિક અને પ્રાદેશિક પ્રશ્નોના અભ્યાસ હાથ ધર્યો છે. ઉપરાંત એ સૌરાષ્ટ્ર અને કચ્છ સહિત સમગ્ર ગુજરાતનાં ઇતિહાસ, સંસ્કૃતિ અને ભાષાના અભ્યાસને ઉત્તેજન આપી રહ્યું છે. પ્રાદેશિક અભ્યાસને લક્ષ્યકેન્દ્ર બનાવતી વેળા એ ભારતીય પ્રજાની એકાત્મકતા અને પ્રગતિને સમગ્ર રીતે અને જગતમાંના એક અતિ મહત્વના એકમ તરીકે સખળ રીતે માને છે. માનવીય અને આર્થિક સાધનો જે કાંઈ લાદે તેના અપવાદે સંશોધનને સ્થાન કે પ્રદેશની કોઈ સીમિતતાનો ખ્યાલ નથી હોતો.

૩. સને ૧૯૩૬માં સ્થાપના થઈ ત્યારથી આ સંસ્થાએ જે વિવિધ પ્રવૃત્તિઓ હાથ ઉપર લીધી અને એમાં જે કાંઈ પ્રાપ્તિ થઈ તેની આ નીચે મંક્ષિત રૂપરેખા આપવામાં આવે છે. આ પ્રવૃત્તિઓ જ્ઞાન અને શિક્ષણની વિવિધ શાખાઓમાં પથરાયેલી રહી છે. આ શક્ય થવાનું કારણ એ છે કે જુદા જુદા હેતુ સિદ્ધ કરવા જે ઉપસમિતિઓ અવારનવાર નિમાતી રહી તેઓની સતત સહકારિતા અને મુદ્ધકાર્યતા અનિચ્છિત રહ્યાં છે.

૧. ઇતિહાસ, પુરાતત્ત્વ અને સંસ્કૃતિ

૪. આ વિભાગને માટે નિયુક્ત થયેલી ખાસ સમિતિએ ચલાવેલી કેટલીક વિશિષ્ટ પ્રવૃત્તિઓ આ પ્રમાણે છે :

(અ) આ સમિતિએ મુંબઈમાં તેમજ ગુજરાતના ખીજા ભાગોમાં સદ્ગત પુરાતત્ત્વ-વિદ ડૉ. ભગવાનલાલ ઇંદ્રજીની સને ૧૯૩૭માં આવેલી શતાબ્દી ઊજવવાની વ્યવસ્થા કરી હતી, અને એને અંગે (૧) ખાસ સ્મારક ગ્રંથ, (૨) મુંબઈ યુનિવર્સિટીના ગ્રંથાલયમાં એમની ધાતુપ્રતિમા તૈયાર કરી મૂકવાનું, અને (૩) જૂનાગઢમાં એમનો જન્મ થયેલો હોઈ એમના જન્મસ્થાન નજીકના માર્ગને અને મુખ્યમાં જ્યાં એમણે કામ કર્યું હતું અને જ્યાં દેહાંત થયો હતો તે સ્થાન નજીકના માર્ગને એમનું નામ આપવાનું, આ ત્રણ કાર્ય સિદ્ધ કર્યાં.

(આ) સને ૧૯૪૧માં આ સંસ્થાએ સદ્ગત રાવળહાદુર કે. એન. દીક્ષિતના સહ-કારથી ડૉ. હસમુખ ધી. સાકળિયાની આગેવાની નીચે સામરમતીની ખીણનું પહેલું ગુજરાત-પ્રાગૈતિહાસિક સંશોધન કાર્ય ગોઠવ્યું હતું. સિંધુ ખીણની સંસ્કૃતિના વિસ્તારની શોધ સાથે અને વળી નર્મદા ખીણમાંના એમના કાર્યની સાથે એમને તેજસ્વી અને શકવર્તી પરિણામ આ રીતે પ્રાપ્ત થયાં.

(ઇ) સમયે સમયે ગુજરાતનાં રાષ્ટ્રીય સાધનોની મોજણીનું કાર્ય પણ ચલાવવામાં આવ્યું છે અને નીચેના નિબંધો પ્રસિદ્ધ થઈ ચૂક્યા છે. ‘મહાગુજરાતની ખનીજસંપત્તિ’ ‘મહાગુજરાતની વનસ્પતિ-સંપત્તિ’ ‘મહાગુજરાતની પશુ-સંપત્તિ’ ‘મહાગુજરાતની ભૂ-સંપત્તિ’ ‘મહાગુજરાતનું અંકપત્રક’ ‘મહાગુજરાતની ભાષાસીમાઓ’ ‘ગુજરાતની જાતિકુલ-સંપત્તિ’ ‘મહાગુજરાતની ભાષા’ ‘ડાંગ પ્રદેશનું વનસ્પતિ-શાસ્ત્ર’ અને ‘ગુજરાતની પક્ષી-સંપત્તિ’.

(ઈ) સને ૧૯૪૮માં મહાન વનસ્પતિશાસ્ત્રી સદ્ગત શ્રી. જયકૃષ્ણ ઇંદ્રજીની શતાબ્દી ઊજવવામાં આવી. એમના સ્મારકમાં ડૉ. આર. ડી. આડતિયાની દેખરેખ નીચે ડાંગ જિલ્લા સહિત ગુજરાતમાં વનસ્પતિ-વિષયક મોજણી-પરંપરા હાથ ધરવામાં આવી છે.

ડાંગ ઉપર બે પુસ્તકો અને ‘ગુજરાતની વનસ્પતિ’ ઉપર એક પુસ્તક પ્રસિદ્ધ કરવામાં આવેલ છે.

આપણા (ખારમાંના) નવા મકાનને માટે મુંબઈ યુનિવર્સિટીના ગ્રંથાલયમાંથી પ્રતિમા પ્રાપ્ત ન થવાને લઈ આંતરરાષ્ટ્રીય ખ્યાતિ પામી ચૂકેલા સદ્ગત ડૉ. ભગવાનલાલ ઇંદ્રજીના તૈલચિત્રનું અનાવરણ મુંબઈના (એ સમયના) રાજ્યપાલ શ્રી. શ્રીપ્રકાશને હાથે તા. ૨૩-૩-૧૯૬૨ના દિવસે નવા મકાન ‘સંશોધનસદન’માં સાધવામાં આવ્યું હતું.

૨. આરોગ્ય સંશોધન સંસ્થા

૫. પ્રજાના આરોગ્ય-સમગ્રની દૃષ્ટિએ રહેલા પ્રશ્નોમાં આ સંસ્થા રસ ધરાવે છે. અને ગુ. સં. મંડળની શરૂઆતથી જ મુંબઈ શહેરના નિષ્ણાત ડોક્ટરોની એક ખાસ સમિતિ નિયુક્ત કરવામાં આવી છે. આ સમિતિની પ્રવૃત્તિઓમાંથી વર્તમાન ‘આરોગ્ય સંશોધન

સંસ્થા' નો વિકાસ થયો છે, અને મંડળના ખારમાંના માકન 'સંશોધનસદન' માં આ સંસ્થા પોતાની પ્રવૃત્તિ ચલાવી રહી છે.

(અ) મધ્યમવર્ગનાં કુટુંબોના આરોગ્ય અને ખોરાકની મોજણીનાં કાર્ય મુંબઈ શહેરમાં સને ૧૯૪૩માં, એનાં પરાંઓમાં ૧૯૪૬-૧૯૪૮ અને ૧૯૫૨માં, અમદાવાદમાં ૧૯૫૩માં અને વડોદરામાં ૧૯૫૪માં કરવામાં આવ્યું છે. આ મોજણીઓના વિષયમાં જુદા જુદા હેવાલ પ્રસિદ્ધ કરવામાં આવ્યા છે.

(આ) કાલ્યાણદેવી વિસ્તારમાં આવેલા એકખંડી નિવાસોમાંના રોગોના કિસ્સાઓની મોજણીનું કાર્ય પૂર્ણ થયું છે. અને ગુ. સં. મંડળના ત્રિમાસિકના અંકમાં એનો હેવાલ પ્રસિદ્ધ થયેલો છે.

(ઘ) આરોગ્ય, ખોરાક, અને કેટલાક રોગોના વિષયમાં કરેલા શોધ-કાર્યનાં પરિણામ અલગ પુસ્તિકાઓના રૂપમાં પ્રસિદ્ધ કરવામાં આવ્યાં છે કેટલીક મહિલા સંસ્થાઓ દ્વારા લગભગ ૭૫૦૦૦ નકલો મફત વહેંચવામાં આવી છે અને બીજો નામની જ કિંમતે વેચવામાં આવી છે.

(ઙ) આરોગ્ય સંશોધન સંસ્થા : ગુ. સં. મંડળે હમણાં રોગોનું નિદાન કરી આપવાની, અને આરોગ્ય વિશેની સેવા પણ આપવાની વ્યવસ્થા કરી છે. ૧૯૪૬માં ડૉ. જે. જી. પારેખના સહકારથી મુંબઈમાં ન્યૂ કવીન્સ રોડ ઉપર આવેલા 'પારેખ હાઉસ' માં ગુ. સં. મંડળે મફત 'કૌટુંબિક આરોગ્ય કેન્દ્ર' નો આરંભ કર્યો હતો. એવું બીજું કેન્દ્ર ૧૯૪૭માં ખાર ખાતે ખુલ્લું મૂકવામાં આવ્યું હતું. પૂરતાં નાણાંના અભાવે આ કાર્ય થોડા સમયને માટે સ્થગિત થયું હતું, પરંતુ ૧૯૬૦માં એ કાર્યનો પુનરારંભ કરવામાં આવ્યો અને એમાંથી જ 'આરોગ્ય સંશોધન સંસ્થા'નો જન્મ થયો. યુનિયેમ લેબોરેટરીઝ ત-ફથી જે વર્ષ માટે અન્ય આવશ્યક સાધન સામગ્રી ખરીદવા સાથેસાથ ખર્ચને માટે રૂ. ૩૦૦૦૦નું દાન આવ્યું છે. આ કેન્દ્રનો મુખ્ય ઉદ્દેશ, જાત પાત ધર્મ લાપા અને વર્ણના ભેદભાવ વિના, જે કુટુંબો આરોગ્યને માટે સલામત હોય અને આ યોજના નીચે જાતે નામ નોંધાવવા માગતાં હોય તેમના વિષયમાં આરોગ્યની વૃદ્ધિ અને રોગોની અટકાયત માટે સંશોધન કરવાનું અને સેવા આપવાનું કેન્દ્ર પૂરું પાડવાનો છે.

કેન્દ્ર નીચેના પ્રકારની સેવાઓ આપવાની વ્યવસ્થા કરી આપે છે : (૧) નોંધાયેલાં કુટુંબની બધી જ વ્યક્તિઓના આરોગ્યની ચોક્કસ સમયના ગાળે ગાળે તપાસ, (૨) લોહી, પેશાબ, બળખા, ઝાડા વગેરેની પ્રાયોગિક પરીક્ષા, (૩) સગર્ભા મતાઓની પૂર્વસમયની અને પશ્ચાત્સમયની સંભાળ, (૪) ધાવણાં અને મોટાં બાળકોને માટે આરોગ્યવિષયક પરીક્ષા, સંભાળ અને સલાહ, (૫) 'વિટામિન્સ' દૂધ વગેરેનું મફત વિતરણ, (૬) કુટુંબ નિયોજનની સલાહ, (૭) આરોગ્ય-સંરક્ષણ માટે સૂચનાઓ અને તાલીમ, (૮) રોગોની સામે રોગમુક્તતાની સેવા, (૯) ઘેર ઘેર મુલાકાત લેવા જતાર અનુભવી ધૈર્યકીર્તિ સામાજિક કાર્યકરની મફત સેવા, અને (૧૦) માંદગીનાં ત્રિવિધ કારણો અને એની અટકાયતના વિષયમાં શોધ.

અત્યાર સુધીમાં ૨૫૦ થી વધુ કુટુંબોની નોંધણી કરવામાં આવી છે અને નિયુક્ત કાર્યકરોની મદદથી સેવાલાવી ડોક્ટરોની મંડળી આ સેવાનું કામ કર્યે જાય છે.

(ઉ) આ ઉપરાંત ખીજ પ્રશ્નો, જેવા કે (૧) ગુજરાતી બાળકોનું આરોગ્ય, જન્મ વખતે ગુજરાતી બાળકોનું વજન, (૩) બાળકો અને એમની માતાઓનો પ્રસવોત્તર અભ્યાસ અને (૪) ખાર વગેરેના હરિજન કુટુંબોનું આરોગ્ય, -યુ. સં. મંડળના ઉત્સાહી કાર્યકરો તરફથી આનો અભ્યાસ સાધવામાં આવ્યો છે અને સંસ્થાના 'ત્રૈમાસિક' સામયિકમાં એનાં પરિણામ પ્રસિદ્ધ કરવામાં આવ્યાં છે.

(ઊ) આ સંસ્થાએ નજીકમાં આવેલા નારલી આગ્રીપાડા ગામની સામાજિક આરોગ્ય-વિષયક મોજણીનું કામ થોડા જ સમય ઉપર શરૂ કર્યું છે. ગામનાં આશરે ૨૫૦ કુટુંબોની મોજણી કરવાનું વ્યારાણુ છે અને ગામના સામાજિક આર્થિક અને આરોગ્યવિષયક પ્રશ્નોનો અભ્યાસ કરવામાં આવશે. નિષ્ણાત સમિતિના માર્ગદર્શન નીચે ડોક્ટરો અને સામાજિક વૈદ્યકીય મંડળી દ્વારા આ કાર્ય કરવામાં આવે છે.

(ઋ) શારીરિક સમપ્રમાણતા (norms): મંડળે માનવ-વિકાસના વિષયમાં ભારે રસ બતાવ્યો છે. આનો ખ્યાલ મેળવવાને માટે અને ઊંચાઈ વજન અને છાતીને માટેનાં સર્વસાધારણ સમપ્રમાણની સ્થિરતા સ્થાપવા મુબઈ શહેરમાં અત્યાર સુધીમાં જે મોજણી-કાર્ય કરવામાં આવ્યા છે. પહેલી મોજણીમાં મુબઈના પરામાં રહેતા શાળાએ જતા ૧૫૦૦ બાળકોનાં ઊંચાઈ વજન અને છાતીના માપ લેવામાં આવ્યા હતાં. ૧૯૫૭ માં આનો હેવાલ પ્રસિદ્ધ થઈ ચૂક્યો છે ખીજી મોજણીમાં ૧૫૦૦૦ બાળકોના ઊંચાઈ વજન અને છાતીનાં માપ લેવામાં આવ્યા હતાં. આનો હેવાલ સંસ્થાના 'ત્રૈમાસિક' માં ૧૯૬૦ ના વર્ષમાં 'મેડિકલ અફ'માં પ્રસિદ્ધ કરવામાં આવ્યો હતો આ અભ્યાસ શ્રી. પો. ગો. શાહે તૈયાર કરેલી 'રાષ્ટ્રીય પ્રજીવન-માપન યોજના'ના એક ભાગ તરીકે હાથ ધરવામાં આવ્યો હતો.

૩. સામાજિક આર્થિક અભ્યાસ :

૬. (અ) આર્થિક અને ખેતી-વિષયક મોજણી : યુ. સં. મંડળના ભિન્ન ભિન્ન કાર્યકરોએ લગની અને ઉમગથી જ્ઞાનની આ શાખાઓનો અભ્યાસ કરવાનું કાર્ય ચાલુ રાખ્યું છે, અને 'ગુજરાતી ગામડામાં આર્થિક જીવન' 'મહેસાણા જિલ્લાની સામાજિક-આર્થિક મોજણી અને 'ગુજરાતનું ગ્રામ-અર્થશાસ્ત્ર' એ મથાળા નીચે ગુજરાતીમાં પ્રસિદ્ધ થયેલાં પ્રકાશનો સારો આદર પામ્યા છે.

(આ) આદિવાસી સંશોધન એકમ : શ્રી. ઠક્કરબાપાનું અવસાન થતાં એક ખાસ સ્મારકરૂપે પ્રસિદ્ધ કરવામાં આવ્યો હતો અને ગુજરાતના આદિવાસીઓના સામાજિક આર્થિક અને સાંસ્કૃતિક જીવનનો અભ્યાસ કરવા એક નાણાં-ભંડોળ ઊભું કરવામાં આવ્યું હતું. ૧૯૪૩ માં લખનૌના ડૉ. મજમૂદારને 'લીડો'નો અભ્યાસ કરવા નિમંત્રણ આપવામાં આવ્યું હતું. 'લીડો' વિશે અભ્યાસ કરવાને ડૉ. ઠાકોરભાઈ ભાણુભાઈ નાયકને કેટલાંક વર્ષો માટે દેશગી આપવામાં આવી હતી, અને દિલ્હીમાંના 'આદિવાસી સેવા સંઘ' તરફથી 'લીડો' ઉપરનો એમનો મહાનિબંધ પ્રસિદ્ધ કરવામાં આવ્યો હતો. ડૉ. મજમૂદારની 'વંશિક, રક્તવિષયક અને આરોગ્યવિષયક મોજણી' ૧૯૪૬ માં પ્રસિદ્ધ કરવામાં આવી.

હતી. એ કાર્યને વધુ આગળ વધારવામાં આવ્યું હતું અને ૧૯૫૫ ના જન્યુઆરીમાં સરકારની સહાયથી એક ખાસ 'આદિવાસી સંશોધન એકમ'ની સ્થાપના કરવામાં આવી હતી. સુસજ્જ કાર્યકર-મંડળી, કેમેરા, ટેપ-રેકોર્ડર, સિને-કેમેરા, અને માનવવંશશાસ્ત્રને લગતા સાધનોની મદદથી દૂખળા, નાયકા-નાયકડા, ગામીત અને ધાણુકાઓ જેવા લિન્ન આદિવાસીઓના વિષયમાં સ્થાનિક અભ્યાસનો આરંભ કરવામાં આવ્યો હતો. એક ગુજરાતના દૂખળાઓ ઉપર અને બીજો નાયક-નાયકડા ઉપર—શ્રી. પો. ગો. શાહના મંથો પ્રસિદ્ધ થઈ ચૂક્યા છે. ગામીત અને ધાણુકા વિશેનો અભ્યાસ ચાલુ છે અને થોડા સમયમાં પૂર્ણ કરવામાં આવશે.

૪. માનસશાસ્ત્રીય સંશોધન સંસ્થા

૭. શ્રીમતી ડૉ. હંસાબહેન મહેતાના પ્રમુખપદે માનસશાસ્ત્ર અને શિક્ષણ સમિતિએ ૧૯૩૬માં એનું કાર્ય શરૂ કર્યું હતું અને શિક્ષણ-કસોટી વગેરે ઉપર સંખ્યાબંધ સંશોધનાત્મક લેખો ૧૯૪૧ અને ૧૯૪૩માં પ્રસિદ્ધ કરવામાં આવ્યા હતા.

૮. ૧૯૫૪ના જુલાઈમાં એક સલાહકારક સમિતિની મદદથી સંસ્થાના એ સગયના પ્રમુખ શ્રી. પો. ગો. શાહ તરફથી 'માનસશાસ્ત્રીય સંશોધન સંસ્થા'ની યોજના ઘડી કાઢવામાં આવી હતી. ૧૯૫૪ના જુલાઈમાં ચાર એકમો : (૧) યોગ્ય રીતે પસંદ કરેલા અનેકવિધ નમૂનાઓ ઉપર આધાર રાખી પ્રત્યેક વય કક્ષાનાં બાળકો અને વ્યક્તિઓની શક્તિ અને સંપ્રાપ્તિને લગતી માનસશાસ્ત્રીય કસોટી ઉપર કામ કરતો એકમ. (૨) એસ. એસ. સી. પહેલાં અને એસ. એસ. સી. પાસ થયેલાં તેમજ પોતાની મેળે તૈયાર થઈ આવેલાઓને માટે ધંધાકીય તેમજ શૈક્ષણિક માર્ગદર્શક એકમ, (૩) અવ્યવસ્થિત અને પાછળ રહી ગયેલાં બાળકોને માટેના ચિકિત્સાકેન્દ્રનો સમાવેશ કરતો જીવાનોની સેવાનો એકમ, અને (૪) મુખ્ય યુનિવર્સિટીની એમ. એડ અને પીએચ. ડીની પદવીને માટે તૈયારી કરતા વિદ્યાર્થીઓને માટે સંશોધન-તાલીમ વિભાગનો આરંભ કરવામાં આવ્યો હતો.

(અ) આ સંસ્થાના 'કસોટી આયોજન વિભાગ' દ્વારા શક્તિ અને સંપ્રાપ્તિની માનસશાસ્ત્રીય અને શૈક્ષણિક કસોટીને આકાર આપવાના કામમાં બાળકોના જીદિમાપન માટે વ્યક્તિગત માપનની તૈયારી કરવા છેક ૧૯૪૩ના વર્ષથી માનસશાસ્ત્રીય કસોટીમાં ગુ. સં. મંડળ રસ બતાવતું આવ્યું છે. (૧) ૧૯૫૪માં નીચેની કસોટીઓ તૈયાર થઈ ચૂકી હતી : ૧. શ્રી. એ. જી. જ્ઞેશી દ્વારા ગુજરાતી બાળકોના જીદિમાપનની સમૂહ-કસોટી. ૨. ડૉ. એન. પી. દવે દ્વારા શબ્દ-ભંડોળ-કસોટી, ૩. ડૉ. એન. પી. દવે દ્વારા વાચન અને સમજની કસોટી, ૪. ડૉ. એન. પી. દવે દ્વારા ગણિત-શક્તિ કસોટી, ૫. યાંત્રિક સમજની કસોટી, અને ૬. અસ્થિર-હેતુકરણ કસોટી.

નીચેની કસોટીઓ અત્યારે ચાલુ છે : ૧. કારકૂની વલણ કસોટી, અને ૨. લગની-વિષયક કસોટી.

(૨) આ એકમે મુખ્ય શહેર માટે તેમજ નિલિન્ન વિદેશીય અને ભારતીય કસોટીઓને માટે સ્થાનિક સમપ્રમાણતા (norms) પણ તૈયાર કરી છે, જેમાંની કેટલીક આ છે :

૧. ડી. એ. ટી. અસ્થિર હેતુકરણ કસોટીઓ.

૨. મિન્નેસોતા પેપર ફોર્મ બોર્ડ કસોટી

૩. ડૉ. કૃષ્ણકાંત ગો. દેસાઈની મંડળી તરફથી બુદ્ધિકસોટી

આ બધી કસોટીઓનો સંસ્થાના 'ધંધાકીય માર્ગદર્શક વિભાગે' તેમજ બીજી હિત-ધારી સંસ્થાઓએ લાભપૂર્વક ઉપયોગ કર્યો છે.

(૩) સંપ્રાપ્તિ કસોટીઓ : અત્યારે આ કાર્ય આ વિભાગની મોટામાં મોટી અને ખૂબજ રસપ્રદ પ્રવૃત્તિઓમાંનું એક છે. ભારત સરકારે ત્રણ વર્ષને માટે ખાસ દેશુગી મંજૂર કરી છે. અને એને લઈ આ વિભાગ મુખ્ય રાજ્યના શિક્ષણમંત્રી ખાતા તરફથી નિયત થયેલા અભ્યાસક્રમ પ્રમાણેના ધોરણ ૫-૬-૭માં શીખવવામાં આવતા બધા વિષયો માટે ગુજરાતીમાં સંપ્રાપ્તિ કસોટીઓનું આયોજન અને સર્વમાન્ય સ્થિર સ્વરૂપ આપવાનું કાર્ય કરી રહ્યો છે. આશરે ૧૮ જેટલી કસોટીઓ લગભગ તૈયાર છે અને એનાં પરિણામ બતાવતો હેવાલ ભારત સરકારના શિક્ષણમંત્રી ખાતાને મોકલી આપવાને તરતમાં જ તૈયાર થશે. આ કસોટીઓ વર્તમાન નિબંધ પ્રકારની પરીક્ષાઓમા દાખલ કરવાના સુધારાઓનો એક ભાગ બની રહે છે.

(૪) કસોટી સેવા એકમ : આ વિભાગ નામના જ દરથી શાળાનાં બાળકોનાં I. t.d. અને ગ્રાહક શક્તિ શોધી કાઢવા શાળાઓને પોતાની સેવા આપવા તત્પર છે. એ આતંદની વાત છે કે શાળાઓએ આ વિભાગની સેવાનો લાભ ઉઠાવવાનો આરંભ કર્યો છે.

(આ) ધંધાકીય માર્ગદર્શક વિભાગ : અત્યારે વિદ્યાર્થીઓને તેમજ એમનાં માબાપો અને વાલીઓ સામે એક મહત્વનો પ્રશ્ન ખડો હોઈ ધંધાની અને બંધ એસતા અભ્યાસક્રમની યોગ્ય પમંદગીમાં વિદ્યાર્થીઓને સહાયક થવાની દૃષ્ટિથી આ વિભાગની શરૂઆત ૧૯૫૪માં કરવામા આવી હતી. આ વિભાગનું માર્ગદર્શન કાર્ય આ માર્ગદર્શનનો લાભ લેનારાં બાળકોનાં માબાપો તેમજ શાળાઓના સત્તાવાળાઓ ઉભય તરફથી પ્રશંસા પામ્યું છે. શાળાઓ તેમજ વ્યક્તિઓ તરફની માંગ હંમેશ વધતી જ જાય છે અને વિભાગને મર્યાદિત, આર્થિક સહાય મળતી હોવાને કારણે સંસ્થાને માટે પહેંચી વળવાનું શક્ય રહ્યું નથી. અત્યાર સુધીમાં ૫૦૦૦ થી વધુ વિદ્યાર્થીઓએ વ્યક્તિગત માર્ગદર્શનનો અને ૫૦૦૦ થી વધુ વિદ્યાર્થીઓએ સમૂહગત માર્ગદર્શનનો લાભ ઉઠાવ્યો છે. આ પ્રમાણે એકત્રિત કરવામાં આવેલી મૂળ સામગ્રી સંશોધન હેતુઓ માટે પણ ઉપયોગી થશે. ધંધાકીય માર્ગદર્શનમાં પ્રયોજાતી કસોટીઓ અને પદ્ધતિઓમાં સુધારો કરવાનો અને એને સર્વસામાન્ય સ્થિર સ્વરૂપનો હેતુ સિદ્ધ કરવા માટે આ વિભાગમાં સંશોધન કાર્ય ચાલી રહ્યું છે.

(બ) બાલ માર્ગદર્શન ચિકિત્સાકેન્દ્ર અને સંશોધન કેન્દ્ર : ૧૯૫૬ના માર્ચમાં વ્યવસ્થિત રીતે ખોલવામા આવેલું ચિકિત્સાકેન્દ્ર એક શારીર-માનસશાસ્ત્રી, શારીર-માનસશાસ્ત્રીય સામાજિક કાર્યકર અને માનસશાસ્ત્ર-વિશારદોની મળેલી નિષ્ણાત મંડળીની મદદથી ચલાવવામાં આવે છે. એ પ્લે-થેરાપી, સાઇકોથેરાપી અને સમૂહ-થેરાપી વગેરેની જરૂરિયાતોથી સુસજ્જ કરવામાં આવેલ છે. માર્ગદર્શન આપવામાં આવે તે પહેલાં બાળકોની

માનસશાસ્ત્રીય કસોટી કરવામાં આવે છે. ધેર માળાપોની અને શાળામાં શાળાના સર્તી-વાળાઓની મુલાકાતો એ આ ચિકિત્સાકેન્દ્રનું મુખ્ય કાર્ય છે. આ ચિકિત્સાકેન્દ્રને અત્યારે 'સંશોધન અને વિકાસ કેન્દ્ર'ના રૂપમાં વિસ્તૃત કરવામાં આવ્યું છે, અને (૧) "બાળકોના વર્તનને લગતા પ્રશ્નોના સંબંધમાં વધુ પડતા રક્ષણનો હિસો", (૨) "બાળકો ઉપર વૈવાહિક વિમ્બાદિનની અસર", અને (૩) શૈક્ષણિક કાર્યતાના હાસ સાથે સામાન્ય રીતે બુદ્ધિશાળી બાળકોના રૂપ કેસોનું પૃથક્કરણ—આવા સંશોધન-પ્રશ્નો હાથ ધરવામાં આવ્યા છે. આવા એક પ્રશ્નનો હેવાલ સંસ્થાના 'ત્રિમાસિક'ના ૧૯૬૨ના 'માનસશાસ્ત્ર-અંક'માં પ્રસિદ્ધ કરવામાં આવ્યો છે.

ચિકિત્સાકેન્દ્રના આરંભકાળથી થયેલા કામનો સંક્ષેપ નીચે પ્રમાણે છે :

વર્ષ	દાખલ થયેલા નવા કિસ્સા	મુક્ત કરેલા	નવા વર્ષમાં બેઝેલી સિદ્ધક
૧૯૫૬-૫૭	૧૦૧	૭૦	૩૧
૧૯૫૮	૭૪	૫૨	૫૩
૧૯૫૯	૭૮	૬૮	૩૩
માસિક રૂ. ૨૦૦૭ થી વધુ મેળવનાર પાસેથી લવાજમથી			
૧૯૬૦	૪૭	૫૭	૨૩
૧૯૬૧	૫૪	૫૭	૨૦

આ પ્રમાણે બધી મળી ૩૫૪ વ્યક્તિઓને દાખલ કરવામાં આવી છે અને ૩૩૪ વ્યક્તિઓને સારવાર આપ્યા પછી છૂટી કરવામાં આવી છે. ચિકિત્સાકેન્દ્ર બાળકોના બધા સંયોગોને લક્ષ્યમાં લઈ કામ કરે છે તેથી બાળક દ્વારા માળાપો અને કુટુંબના બીજા સભ્યોએ વ્યક્તિગત ઘટક દ્વારા ચિકિત્સાકેન્દ્રનો લાભ પૂરેપૂરો ઉઠાવ્યો છે. આ પ્રમાણે ચિકિત્સાકેન્દ્રે આશરે ૧૦૦૦ થી ૧૫૦૦ વ્યક્તિઓને સેવા આપી છે. ચિકિત્સાકેન્દ્રમાં સારવાર પામેલી વ્યક્તિઓ સારા પ્રમાણમાં સુધારો સાધી ગઈ છે, ઉપરાંત સારવાર પામેલી વ્યક્તિઓને મુદત મુદત પર ફરી જોવામાં આવવાનું કાર્ય એ પણ બતાવે છે કે સુધારો જળવાઈ રહ્યો છે યા તો વૃદ્ધિ પામ્યો છે.

(ક) ઔદ્યોગિક એકમ : આ એકમનો આરંભ ૧૯૫૯માં કરવામાં આવ્યો હતો. આમાં, લવિબ્યમાં વ્યવસ્થાપકોને યોગ્ય નિરીક્ષકો મેળવવામાં સહાયક થઈ પડે એ ઉદ્દેશથી નિરીક્ષકોની ગ્રાહકશક્તિનું માપ કાઢવા કસોટીઓ કરવામાં આવે છે. 'અંગુલિ-ત્વરા કસોટી' તરીકે જાણીતી એક બીજી કસોટી માટે સમપ્રમાણતા વિશે પણ કાર્ય થયે જાય છે. મુંબઈના પશ્ચિમ પરાંવિલાગમાંના એક કારખાનામાં આ એક પ્રકારની કસોટીઓનો નમ્ર પ્રયત્ન શરૂ કરવામાં આવ્યો છે. 'ભારત સરકારની આયોજન-કમિશનની સંશોધન કાર્યક્રમ સમિતિ'એ મુંબઈના પશ્ચિમ પરાંવિલાગમાંનાં કોઈ જ કારખાનાંઓમાં "કામદાર વ્યવસ્થાપક-સંબંધ"નું કાર્ય આ એકમને સોંપવામાં આવ્યું હતું. આ કાર્ય પૂર્ણ થયું છે અને હેવાલ એ 'સંશોધન કાર્યક્રમ સમિતિ'ને સોંપવામાં આવ્યો છે.

(ગ) અનુરનાતક અધ્યાપન વિભાગ : ૧૯૫૮ના વર્ષમાં મુંબઈ યુનિવર્સિટીએ સંશોધનથી એમ. એડ. અને પીએચ. ડી. ને માટે શિક્ષક-તાલીમ લેતા અનુરનાતક વિભા-

થીઓને માર્ગદર્શન આપવાને માટે આ સંસ્થાને માન્યતા આપી હતી. એ કાર્ય નાણાંને અલાવે હાલ સ્થગિત થયું છે.

૫. ગ્રંથાલય

૮. આરંભથી જ સંસ્થાએ એક નાનું સંદર્ભ-ગ્રંથાલય શરૂ કર્યું હતું. આ ગ્રંથાલય ઝડપથી વૃદ્ધિ પામતું રહ્યું છે અને અત્યારે માનસશાસ્ત્ર, શિક્ષણ, કસોટી-આયોજન, આકાશશાસ્ત્ર, ધંધાકીય અને શૈક્ષણિક માર્ગદર્શન, સમાજશાસ્ત્ર, માનવવંશ-શાસ્ત્ર અને ગુજરાતી સાહિત્ય જેવા વિષયોનાં અદ્યતન ગ્રંથો અને સામયિકોથી સમૃદ્ધ બન્યું છે. ગ્રંથાલય લાયકાત ધરાવતા ગ્રંથપાલના હવાલામાં છે.

ગુજરાત સરકારે સંસ્થાના મુખ્ય કાર્યાલયના ગ્રંથાલય માટે ગુજરાતી પુસ્તકો વસાવવા રૂ. ૧૦૦૦૦ ની ખાસ દેણગી ગયે વર્ષે મંજૂર કરી હતી, જેમાંથી રૂ. ૨૦૦૦૦ નાં પુસ્તકો અમદાવાદ-શાખામાં મૂકવાની સરકારની સૂચના પ્રમાણે વ્યવસ્થા કરવામાં આવી હતી. આશરે ૨૦૦૦ પુસ્તકોનો આમ ગ્રંથાલયમાં વધારો થયો છે.

૬. પ્રયોગશાળાઓ :

૯. (અ) માનવશાસ્ત્રીય પ્રયોગશાળા માનવશાસ્ત્રને લગતી મહત્ત્વની અને ઉપયોગી શસ્ત્રસામગ્રીથી સુસજ્જ છે. વધુ પ્રયોગો કરવાને માટે અધિકૃત માનસશાસ્ત્રીય અને શૈક્ષણિક અનેક પ્રકારની કસોટીઓ અહીં એકત્રિત કરવામાં આવી છે. એક નિષ્ણાત વ્યક્તિને એનો હવાલો સોંપવામાં આવ્યો છે.

(આ) 'સામાજિક સંશોધન એકમને માટેની પ્રયોગશાળા પાસે અત્યારે (૧) માનવ-વંશમાપક શસ્ત્રોનો એક સેટ, (૨) ચલ-કેમેરા, (૩) કેમેરા, (૪) માનવવંશમાપક યંત્ર અને (૫) બેટરીથી ચાલતું ટેપ-રેકોર્ડર છે.

(ઇ) ગયે વર્ષે પેથોલોજિકલ પ્રયોગશાળા તૈયાર કરવામાં આવી છે અને સંસ્થાના નવા મકાનમાં શરૂ કરેલી 'કૌટુંબિક આરોગ્ય સંશોધનસંસ્થા' ની સાથે જોડવામાં આવી છે. પેશાબ, લોહી, બળખા, ઝાડો વગેરે તપાસનાર નિષ્ણાત વ્યક્તિના હવાલે આ પ્રયોગશાળા છે.

૭. પ્રદર્શન-ગૃહ

૧૦. સંસ્થાના પ્રદર્શન-ગૃહે (અ) ગુજરાતના વિલિન્ન લાગોમાંથી એકત્રિત કરેલાં રોપાં અને બિયાનો એકત્રિત કરેલો સંગ્રહ, (૨) થોડા સોનાં ચાંદી અને તાંબાના સિક્કા, (૩) પાઘસાધનો, આભૂષણો, પોશાક, આદિવાસીઓનાં દેવ-દેવીઓની મૂર્તિઓ, તથા ગુજરાતની કેટલીક આદિવાસી જાતિઓના અંત્યેષ્ટિના અને ખીજ પદાર્થોના નાના એવા સંગ્રહથી શરૂઆત કરી છે.

ક. કીર્તિદા કોન્ટ્રેક્ટરના હવાલે આ પ્રદર્શન-ગૃહ છે. એમણે સદ્ગત ડૉ. ભગવાન-લાલ ઇંદ્રજીવું તૈલચિત્ર સંસ્થાને અર્પણ કર્યું છે, જેને માટે આભારની લાગણી વ્યક્ત કરવામાં આવે છે.

રજતજયંતી

૧૧. ગયે વર્ષે સંસ્થાને પચીસ વર્ષ પૂરાં થતાં એની રજતજયંતી ઉજવવામાં આવી હતી. એના અંગમાં ૧૭મી ડિસેમ્બર, ૧૯૬૧ થી ૨૩મી સુધી 'માનસશાસ્ત્રીય સંશોધન સંસ્થા' 'આરોગ્ય સંશોધન સંસ્થા' 'સામાજિક આર્થિક સંસ્થા' અને 'સાંસ્કૃતિક પ્રદર્શનગૃહ'ની પ્રવૃત્તિઓનો ખ્યાલ આપતી એક પ્રદર્શની ભરવામાં આવી હતી, (૨) મુંબઈમાં ૧૮૮૦માં સદ્ગન થયેલા ડૉ. ભગવાનલાલ ઇંદ્રજીનું તૈલચિત્ર ખુલ્લું મૂકવામાં આવ્યું હતું, અને (૩) ૧૯૬૨ના ઓક્ટોબર મહિનામાં અમદાવાદ ખાતે 'ચોથી ગુજરાતના સંશોધન કાર્યકરોની પરિષદ' ભરવાનો નિર્ણય કરવામાં આવ્યો હતો.

૯. અમદાવાદ-શાખા

૧૨. સંસ્થાએ બે વર્ષ ઉપર લીધેલા નિર્ણય પ્રમાણે ગુજરાતમાં એની સેવાઓને મૂર્ત કરવા તા. ૧૨મી માર્ચ, ૧૯૬૧ને મંગલ દિવસે અમદાવાદ ખાતે શાખાનું કાર્ય શરૂ કરવામાં આવ્યું હતું. આના અનુસધાનમાં ૨૩મી જુલાઈ, ૧૯૬૧ના દિવસે કેંદ્ર સરકારના નાણાંમંત્રી માન. શ્રી. મોરારજી દેસાઈને હરને 'ગુજરાત આરોગ્ય સંશોધન સંસ્થા'નું ઉદ્ઘાટન કરવામાં આવ્યું હતું. છેલ્લા દોઢ વર્ષથી સાંકડીશેરી અને આસપાસના લક્ષ્મીમાં થઈ આશરે ૩૦૦થી વધુ કુટુંબોની શારીરિક તપાસ નિષ્ણાત ડોક્ટરો દ્વારા કરવામાં આવી છે. શરૂથી જ લોહી પેશાબ ઝાડા વગેરેની પેથોલોજિકલ તપાસ પણ નિષ્ણાત દ્વારા કરવામાં આવે છે. સાંકડીશેરીમાં હરિભક્તિની પોળમાં શ્રી નટવરલાલ ગો. શાહે વાપરવા માટે આપેલા મકાનમાં આ કાર્ય ચાલતું હતું, જેમનો અત્રે આભાર માનતાં આનંદ થાય છે. કેંદ્ર સરકારના કુટુંબ નિયોજન ખાતા તરફથી મળેલી દેણગીના અનુસધાનમાં કુટુંબ-કલ્યાણ કાર્ય શરૂ કરવાનું થતાં ૧લી સપ્ટેમ્બર, ૧૯૬૨થી રતનપોળ, ઝવેરીવાડમાં ભાડાનું મકાન લઈ એમાં અત્યારે આ બેઉ પ્રવૃત્તિઓ નિષ્ણાતોને હાથે શરૂ કરવામાં આવી છે અને લોકો એનો સારો લાભ ઉઠાવી રહ્યાં છે.

વર્ષ દરમિયાન અમદાવાદમાં પાંચ વર્ષની નીચેના બાળકોના મરણનાં કારણો નિશ્ચિત કરવાનું કાર્ય મ્યુનિ. કોર્પોરેશને કરી આપેલી સગવડથી શરૂ કરવામાં આવ્યું હતું અને ૧૧૦૦૦ બાળકોની નોંધણી કરવામાં આવી છે. અત્યારે એના આંકડા કાઢવાનું કાર્ય સંસ્થાના એક મંત્રી ડૉ. ચંદ્રકાંત ઈ. ઝાલા મેડિકલ સમિતિના અધ્યક્ષ ડૉ. ત્રિભુવનદાસ પટેલ અને સંસ્થાના એક બીજા મંત્રી ડૉ. માનશંકર લ. રાવળના નિદેશ પ્રમાણે કરી રહ્યા છે. આરોગ્યને અંગેનો તપાસમાં શારીરિક સમપ્રમાણતાના આંકડા પણ ચિકિત્સા કરેલાં કુટુંબોની તપાસ ઉપરથી કાઢવાનું કાર્ય પણ અત્યારે ચાલુ છે.

આ ઉપરાંત અમદાવાદ શાખાએ શરૂથી જ ગુજરાત રાજ્યની વિવિધ જોડીઓની મોજણી કરવાના કારણે નિર્ણય પ્રમાણે આગામી નિયમક તરીકે નિમાયેલા બાળકોના લાભાવિદ ડૉ. ચંબકલાલ ન. દવેએ રૂપરેખા દોરી હતી પરંતુ એઓ કારકની શારદા-પીઠના અનુસ્નાતક વર્ગના નિયમક તરીકે ૧૫મી જુલાઈ, ૧૯૬૧થી જતાં એ કાર્ય સંસ્થાના એક મંત્રી પ્રો. કેશવરામ કા. શાસ્ત્રીને માનાર્થ નિયમકને રચાને મૂકી કરવાનું સોંપવામાં આવ્યું, ડૉ. દવેએ કરેલી રૂપરેખાની સરણીએ નવેસરથી એમણે ગુજરાત રાજ્યનો

અધિકૃત નકશો પ્રાપ્ત કરી એના આશરે ૪૦ x ૪૦ કિલોમીટરના ૧૦૮ ખંડ પાડી એટલાં જ તપાસનાં કેન્દ્રો નક્કી કરી આપ્યાં છે. અને બોલીઓના શાસ્ત્રીય અભ્યાસ માટેની સામગ્રી એકત્રિત કરવા એક પ્રશ્નાવલી પણ એમનાં તરફથી સાથે તૈયાર કરવામાં આવી છે.

આ ઉપરાંત એમણે સર નયોજ એ. ગ્રિયર્સનના “ભારતીય ભાષાસમીક્ષા”ના નવમા અંકના ભીલી બોલીઓવાળા ત્રીજા ખંડનો ગુજરાતી અનુવાદ કરવાના કાર્યનો પણ આરંભ કરી અડધો અનુવાદ સાધ્યો છે. બાકીનો અનુવાદ નવા વર્ષમાં પૂરો થવાની ધારણા છે.

અમદાવાદ-શાખાના ખીજા માનાઈ અધ્યાપક ડૉ. ધીરજલાલ ધ. શાહ ૧૬ મી શતાબ્દીના એક મધ્ય. ગુજરાતી કવિ સારંગના રચેલા અપ્રસિદ્ધ ઐતિહાસિક કાવ્ય ‘બોજ પ્રબધ’ (મુંજરાજતું કથાનક)નું સંપાદન એના સાંસ્કૃતિક અભ્યાસ સાથે તૈયાર કરી રહ્યા છે, જે હવે પછીના વર્ષે પૂર્ણ થવા ધારણા છે.

સંસ્થાએ શેઠશ્રી મદનમોહન મંગળદાસ તરફથી રૂ. ૫૦૦૦૦ માંથી એક હપતા તરફે મળેલી રૂ. ૨૫૦૦ ની મદદને આધારે અમદાવાદમાં મળતી શાકભાજીનો અભ્યાસ કરી એની ઉપયોગિતા વગેરેના અભ્યાસનું કાર્ય પ્રો. હુષીકેશ ના. પાઠકને સોંપ્યું છે. એ કાર્યની પણ ઠીક ઠીક પ્રગતિ થઈ છે. ચૂનો ક્યાં ક્યાં સ્થાનેમાંથી મેળવવો વગેરે સિમેન્ટની અછતને લઈ ચૂનાથી કાર્ય કરવું હોય તો એ તપાસ ગુજરાત રાજ્યના નિષ્ણાત સ્થપતિ શ્રી. કે. એમ. કાંટાવાળાએ કરી એનો હેવાલ તૈયાર કર્યો છે. એનો ગુજરાતી અનુવાદ તૈયાર થઈ ગયો છે અને એ પ્રકાશિત કરવાની ધારણા છે.

અમદાવાદમાં સંસ્થાને પોતાનું આગવું મકાન થાય એ માટે શરૂથી જ પ્રયત્ન કરવામાં આવ્યો છે, અને મકાન ફંડમાં ગુજરાત રાજ્યના શિક્ષણ ખાતા તરફથી રૂ. ૧૫૦૦૦ ની પ્રતીક દેણગી આપવામાં આવી છે; આરોગ્ય ખાતા તરફથી પણ એવી પ્રતીક દેણગી મળશે એવી ધારણા છે. આ દિશામાં અમદાવાદના ધનિકો તરફ પણ દ્રષ્ટિ છે જ, અને એને પણ સારગપુર કોટન મેન્યુ. કાં. લિ. તરફથી રૂ. ૧૦૦૦ ના દાનથી આરંભ થયો છે.

ગયા વર્ષના ખર્ચમાં મદદ રૂપે શેઠશ્રી વાડીલાલ લલ્લુભાઈ મહેતા હસ્તક રૂ. ૨૦૦૦૦ નું દાન મળ્યું હતું, ગુજરાત રાજ્યના આરોગ્ય ખાતા તરફથી ૧૯૬૦-૬૧ના વર્ષની રૂ. ૩૦૦૦૦ અને ૧૯૬૧-૬૨ ના વર્ષની રૂ. ૩૦૦૦૦ ની દેણગી મળી છે. એ માટે સરકારનો તેમજ આ સૌ ગૃહસ્થોનો અહીં આભાર માનીએ છીએ.

સંસ્થામાં થતા સંશોધન કાર્યની સાથે અનુસ્નાતક વિદ્યાર્થીઓને તૈયાર કરવાની સરળતા થાય એ માટે અમદાવાદ શાખાને ગુજરાત યુનિવર્સિટીની માન્યતા મેળવવાનો પ્રયત્ન શરૂ થયો છે.

આ માટે સંસ્થાના આગવા મકાનની પહેલી આવશ્યકતા છે. ખીજી મહત્વની આવશ્યકતા સુયોગ્ય ગ્રંથાલયની છે. સારું ગ્રંથાલય જમાવવાની દિશામાં ધીમે ધીમે પ્રગતિ થતી આવે છે. આ દિશામાં અમદાવાદના ધનિકો ધ્યાન આપશે જ એવી અમને પાકી શ્રદ્ધા છે.

ગયે વર્ષે અમદાવાદમાં પણ ગુ. સં. મંડળની રજત જયંતીના અનુસંધાનમાં સંસ્થાની અમદાવાદની શાખાનાં અધ્યક્ષ શ્રીમતી ડૉ. હંસાબહેન મહેતાના હસ્તે સદ્ગત ડૉ. ભગવાનલાલ ઈંદ્રજીના તૈલચિત્રનો અનાવરણ વિધિ સાધવામાં આવ્યો હતો.

અમદાવાદ શાખાએ એની આ અત્યંત બાધ્યાવસ્થામાં પણ “ગુજરાતના સંશોધન કાર્યકરોની એથી પરિષદ” મેળવવાનો મુખ્ય કાર્યાલયના આદેશ પ્રમાણે પ્રયત્ન કર્યો છે, એ પ્રસંગના ઉપક્રમમાં આ વિશેષ અંથ પ્રસિદ્ધ કરવામાં આવ્યો છે.

ગુજરાત સંશોધન મંડળની પચીસીની સિદ્ધિઓ

૧. ગુજરાતમાં અર્વાચીન સંશોધનના સ્થાપક સદ્ગત ડૉ. ભગવાનલાલ ઈંદ્રજી મહેતાનું સમર્થન

૨ સાગરમતીની ખીણમાં લાંઘણેજ નજીક પ્રાગૈતિહાસિક પહેલી શોધ-ખોદ અને એ રીતે પાષાણયુગીન સંસ્કૃતિની શોધને આગળ ધપાવવામાં સહાય

૩ ગુજરાત પ્રદેશ મુખ્ય રાજ્યમાં અવિલાંબિત હતો ત્યારે મહાગુજરાતના વૈજ્ઞાનિક અને શાસ્ત્રીય અભ્યાસને લગતા નિબંધોનું પ્રકાશન

૪ મહાન વનસ્પતિશાસ્ત્રી સદ્ગત શ્રી. જયકૃષ્ણ ઈંદ્રજીની શતાબ્દીની ઉજવણી અને ડૉ. શાંતાપાઉદ્વારા ડાંગ જિલ્લાની વનસ્પતિ-વિષયક મોજણી

૫ આદિવાસી પ્રજાની ખોલીઓનો ભાષાકીય અભ્યાસ

માનસશાસ્ત્રીય સંશોધન સંસ્થા :

૬ ગુજરાતી ભાષામાં બુદ્ધિમાપન-કસોટીઓ અને સંપ્રાપ્તિ-કસોટીઓનું આયોજન; અવ્યવસ્થિત બાળકોને વ્યવસ્થિત કરવા માટે અને સમાજવિરોધી વ્યક્તિ તરીકે થવામાં એવાં બાળકોને એમાંથી અટકાવવા માટે બાલ-માર્ગદર્શક ચિકિત્સાકેન્દ્ર.

૮ સાચો ધંધો મળી રહે એ દૃષ્ટિએ બાળકોને દોરવણી આપવા ધંધાકીય અને શૈક્ષણિક માર્ગદર્શક સંસ્થા

૯ મુખ્ય યુનિવર્સિટીના એમ. એડ. અને પીએચ. ડી. ના વિદ્યાર્થીઓને શિક્ષક-તાલીમ માટે તૈયાર કરવા અતુરનાતક વિભાગ (શર કરેલો, તે નાણાંના અભાવે બંધ થયો છે)

સામાજિક-આર્થિક સંશોધન સંસ્થા :

૧૦ મહેસાણા જિલ્લામાંના ગુજરાતી ગ્રામડાના આર્થિક જીવનનો અભ્યાસ અને ખીજ સંખ્યાબંધ નિબંધોનું પ્રકાશન

૧૧ ગુજરાતની દૂબળા ભીડો ગામીતો ધાણકા નાયકા-નાયકડા વગેરે આદિવાસી પ્રજાના જીવનનો અભ્યાસ; આ અભ્યાસમાં સામાજિક-આર્થિક ઉપરાંત માનવવંશિક રક્તવિષયક અને આરોગ્યવિષયક સાગમોનો પણ અભ્યાસ

૧૨ ઔદ્યોગિક સંશોધનોનો અભ્યાસ

૧૩ મુંબઈના પગાર-ધોરણનો અભ્યાસ.

૧૪ મુંબઈ શહેરના સામાજિક પરિવર્તનને લગતો અભ્યાસ

આરોગ્ય સંશોધન સંસ્થા :

૧૫ પંજાબના બાળકો અને મહાવિદ્યાલયોના વિદ્યાર્થીઓના આરોગ્યનો અભ્યાસ

૧૬ મુંબઈ અમદાવાદ વડોદરા અને ખીજાં સ્થાનોનાં ગુજરાતી કુટુંબોનાં ખોરાકનો અભ્યાસ

૧૭ મુંબઈના ગિરગામ કાલમાદેવી ખાર વિભાગનાં તથા અમદાવાદ અને વડોદરાનાં તંદુરસ્ત કુટુંબોની આરોગ્ય-મોજાણી

૧૮ મુંબઈ-પરાંવિભાગના નારલી-આઘ્રીવાડા ગામની આરોગ્ય-મોજાણી

૧૯ શારીરિક અને માનસિક સમપ્રમાણતાનો અભ્યાસ વગેરે

અમારી જરૂરિયાત વાર્ષિક રૂ. ૫૦૦૦૦૦ ના ખર્ચની જોગવાઈ સાથે પાંચ લાખ રૂપિયાના ખર્ચની સામાજિક વિદ્યાઓને લગતું ગુજરાત સંશોધન વિદ્યાલયન સિદ્ધ કરવાની છે.

Proceedings of

Fourth Conference of Research Workers for Gujarat

19th, 20th, 21st October, 1962

At Ahmedabad

FIRST DAY : 19th Oct. 1962

The preliminary session of the 4th Conference of Research Workers for Gujarat was held at ATIRA—auditorium in the Gujarat University Campus at 5 p. m. under the president-ship of Hon. Dr. Jivraj N. Mehta, Chief Minister, State of Gujarat. Mr. P. G. Shah, President of the Gujarat Research Society, Dr. Mrs. Hansabehn J Mehta, Chairman of the Gujarat Research Society Ahmedabad-Branch, Dr. K. M. Munshi, Chief guest, most of the Presidents of different sections of the Conference, most of the Vice-Chairmen of the Gujarat Research Society Ahmedabad-Branch, Shri K. T. Desai, Chief Justice and other judges of the Gujarat High Court, Shri N. P. Bhagavati, Vice-Chancellor of the Banaras Hindu University, Shri L. R. Desai, Vice-Chancellor of the Gujarat University, prominent citizens of Ahmedabad—Shri Amritlal Hargovandas, Shri Chinubhai Chimanlal, Ex-Mayor and distinguished research scholars from all parts of Gujarat State as well as Bombay were present on this occasion.

After the prayer messages were read by Prof. K. K. Shastree, Hon. Director of the Gujarat Research Society—Ahmedabad Branch. Notworthy were the messages from the President of India, Dr. Radhakrishnan, Vice-President, Dr. Zakir Husain, Shri H. V. Divatia, Founder President of the Society, Shri M. B. Nanavati, Dr. D. N. Wadia, F. R. S. and many others.

The Conference was declared inaugurated by the Governor of Gujarat, Nawab Mehdi Nawaz Jung Bahadur. As he was called away suddenly to New Delhi his sympathetic and encouraging address was read out in soft but emphatic tones by Dr. Shrimati Hansabehn Mehta, the Chairman of the Ahmedabad-Branch as it follows :

“On attaining Independence it was only after the first flush of freedom that we began to realise how far behind we were and how meagre our resources were, compared to most other great countries of the world. The experience gained by us during the first two Five Year Plans led us to see more clearly our needs and fields, many other things which go with such developments, are still lacking in our country. Amongst these perhaps the most important are the facilities for research. It is therefore of the utmost importance that whatever research facilities we have so far built up should be utilised to the best

advantage. We can ill-afford to waste even the slightest bit of our meagre resources. With the objects which it has set for itself, the Gujarat Research Society is in this respect making a most invaluable contribution. At this stage research in our country is still not very remunerative to the research workers and this, combined with the other short-comings in the facilities for research attracts the majority of persons eminently competent in this field to other activities. I hope that Gujarat Research Society will, while organising and co-ordinating research, also consider ways and means for building up sound research facilities and achieve for research and research workers the very important and useful position which is their due in the modern world.

I wish all success for the 4th Conference of the Society and send my very best wishes to the Research Workers of Gujarat. I regret my inability to attend the Conference as I have to be in Delhi in connection with some important work."

(Sd/-) Mehdi Nawaz Jung

In her address as the Chairman of the Conference (printed as I at the end of these proceedings) Dr. Hansabehn Mehta gave in Gujarati a brief description of researches carried out by the Gujarat Research Society since 1953 when she had presided over the Third Conference at Baroda as the Vice-Chancellor. Research had been also encouraged by the three universities in Gujarat and the contribution of the Baroda University was the most noteworthy in the fields of archaeology at Somnath and Shamalaji and in Chronology of Gujarat. She rendered to applied research in the fields of oil and industrial technology, in addition she emphasised the applied research in health of Gujarati families and Socio-Economic studies of Ādivāsīs. She appealed for large funds for the building for the Gujarat Research Society in Ahmedabad

An engraved copper-plate with two linked sheets containing a copy of the Sanskrit address which was read out on 29th August, 1962 when he had completed his 75th year was formally presented to Dr. Jivraj Mehta, the President, by our honorary Treasurer Shri Chandrakant M. Jagabhaiwala.

In his short, informative and encouraging presidential address (printed as II at the end of the preceedings) the veteran Chief Minister sympathetically declared that the Government of Gujarat is greatly interested in the activities of the Gujarat Research Society and would be happy to be of assistance to the Society consistant with other commitments. In the Third Plan Gujarat State has provided a sum of Rs. 355 lakhs on research and surveys on various schemes. An Industrial Research Committee has also been appointed which considers requests from research workers for assurance in research programmes. He was glad that the Gujarat Research Society has given considerable attention to questions of social, economic, administrative and educational importance and is

expected in future to take greater share in these subjects. He suggested that research literature should be published in a language easily understood by the common man. He was glad that the Society takes interest in social organisation in addition to research. He advocated that voluntary research organisations should see that no duplication takes place and that they should mutually co-ordinate their activities in research training and publication. They should have a common approach and should specialise in which they are best equipped.

At this stage a Donation of Rs. 51,000/- for a Pathological Laboratory of the Gujarat Health Research Institute was announced by Shri Kantilal and Ratilal Broker, trustees of the Late Shri Nansha Kalidas. (The declaration is printed as III at the end of these proceedings).

Dr. K. M. Munshi then gave an illuminating speech (printed as IV at the end of these proceedings) on "Gujarat as a Centre for Integration" where he advocated the importance of research. He described its limitations owing to the number of competent men being limited and described how research helps nation's integration. The history of the cultural relations of Gujarat also pointed to many directions in which nationality is secured. He mentioned how the Agricultural Institute at Annand and other research institutions in Gujarat conducted research of importance to India and the world.

In proposing a vote of thanks Mr. P. G. Shah explained how the Gujarat Research Society had evolved its activities during the last twenty-six years in its attempts to solve the problems of the region by research. The variety of problems centred round the main conception research being applied to fully developing the physical, mental and economic resources of the people of the region without forgetting their duties to the Nation. Its activities specialised under the heads, Health Research of the family, Psychological Research and Socio-Economic Cultural Research. The Society was broad based on the pattern of the Royal Society of London, the British Association on Advancement of Science and the Indian Science Congress. He hoped that the formation of the Ahmedabad Branch will enable it to concentrate on Health Research and Linguistic Research in the whole region and also to co-ordinate and organise research with help of the State and in co-ordination with three universities who were spending large amounts on theoretical research while there was great scope for applied research. He thanked the speakers, delegates and visitors who had attended the Conference. Principal Y. G. Naik joined in thanking them.

THE SECOND DAY

The Second Day Conference commenced at the Bhasha-Sahitya-bhavan of the Gujarat University on the 20th October, 1962 at 8 a. m. with the joint

session on History, Archaeology and Linguistics, but the number of participants became so large that it was found necessary to divide them into three sub-sections, one of History presided over by Prof. Rasiklal Parikh, the Director of B. J. Research Institute, second on Archaeology, presided over by Dr. H. D. Sankalia of the Deccan College Research Institute, Poona and the third on Linguistics by Dr. T. N. Dave, now Director of the Sharda Path Post-graduate Institute at Dwarka. There was lively and intelligent discussion on various papers with reference to present work of the scholars and their plans by the future work. The Linguistic Section attracted lively discussion, specially by the proposals of the Gujarat Research Society for linguistic work among the tribes of Gujarat before they disappear. Dr. Sankalia presented a series of diagrammatic painting showing the development of the history of man in Gujarat, study of microlithic man commenced by him in 1941 at Langhney at the suggestion of the Gujarat Research Society. Prof. Rasiklal Parikh described his plan of work on authentic history of Gujarat by a number of scholars and on other subjects.

The afternoon of the 2nd day was fixed for two subjects, viz. one on Rural Planning and another on Social Studies. At first a joint session was held for hearing the presidential addresses, but soon two separate sections were found necessary. In the session on Rural Planning, the President, Shri Vaikunthbhai Mehta, the Chairman of the Village Industries and Khadi Commission gave a brief description of his experience of rural industries. He strongly advocated "action" to be combined with research on the lines of the U. P. Institute of Planning Research and Action at Lucknow and suggested that Gujarat Research Society should start similar activities.

In the Social Section Dr. K. M. Kapadia, Professor of Sociology at the Bombay University School of Sociology in his presidential address advocated the study of Social Forces since the time of the arrival of the British in India, giving examples of each study. There was lively discussion on the three papers which could only be read out of the eight presented.

The evening was high-lighted by the address of Shrimati Mrinalini Sarabhai on the Folk Art of Gujarat which was illustrated by three characteristic performances, the religious dance Jāg with head loads, the Garbā with metal pots and the Rās with small dāndī-sticks. Each movement was illustrated by a short scientific description by Shrimati Mrinalini explaining the technique and the theory of the folk art behind the three dances performed by her students.

The Dinner given by the Society to the sectional presidents, speakers, delegates and other invitees was popular and secured closer social contact among the participants.

THE THIRD DAY

The Third day commenced with the Section on Education and Psychology presided over by Dr. Mrs. M. R. Shah, the Education Officer, the Bombay Municipal Corporation. Her presidential address described how Research had helped and should help in the solving of the present problems of education. There was a lively discussion on the address and on the six papers that were read.

In the afternoon, there was a long session commencing at 2 p. m. when the eminent physician Dr. B. B. Yodh from Bombay, presided over a symposium in which the well-known doctors, Dr. Narendra Desai (Physician), Dr. M. D. Desai (Surgeon), Dr. Anklesaria (Gynecologist), Dr. H. I. Jhala (Pathologist) of the Haffkine Institute, Bombay, and Dr. Niyogi of Baroda University took part and explained to an eager audience the progress in the various subjects and difficulties of conducting research in addition to the routine medical or teaching work.

The Section on Public Health was presided over by Dr. T. B. Patel, the eminent doctor who as the Director combines in his new office the supervision of Medical Services and Public Health Departments of the Gujarat State. He explained how the control of diseases was attempted by the new Gujarat State and the two services were working in co-operation, and how the State provided a vast field for undertaking community based research for dealing with the health programme of Gujarat. Mr. P. G. Shah, President of the Society pointed out difference between Medical care research in the form of study of Norms of Health, health a specific preference, especially when there are not enough doctors, dispensaries or hospitals to deal with the growing stream of sickness. Prof. D. N. Pai, Professor of Social Medicine, K. E. M. Hospital—G. S. Medical College, Bombay made an appeal for study of the problems of prevention of health.

THE PLENARY SESSION

The Plenary session was held at 5 p. m. under chairmanship of Dr. Mrs. Hansabehn Mehta where the various sectional presidents gave a vivid account of the proceedings of each section, the details of which will be published in the following pages at their proper places. This discussion proved so interesting that the attendance to the garden-party by the Vice-Chancellor got delayed considerably.

Award of Medals :

Mr. P. G. Shah on behalf of the G. R. Society declared that : To encourage research workers it has been the practice of the Society to award Silver Medal to the author of the best article published in the Journal during the year. This practice has been followed for now 16 years during which Silver Medals have been awarded to 15 authors. This activity of the Society is in the

furtherance of the principal object of the Society. Usually award-winners are selected from among eminent scholars.

On this occasion of Silver Jubilee Celebrations the following Scholars have been selected for the award of Silver Medals of the Society :

(1) *Dr. T. B. Naik (1958)* :—Principal, Teachers' Training College, Bhopal, an eminent anthropologist who has devoted his research work to the field of anthropology, is awarded the Silver Medal for his paper entitled "Strains of a Social System" published in our Journal, Vol. XX, No. 2, April, 1958 p. S-1.

(2) *Dr. Mrs. M. R. Shah (1959)* :—Dr. Mrs. M. R. Shah is a leading research worker and a research organizer in the field of Educational administration and Psychology. She has special interest in the construction of various types of psychological tests. She is a spirit behind the Psychological Research Institute of the Society, leading organizer of Sadhana Educational Research Institute and present Education Officer of the Bombay Municipal Corporation. She has contributed several articles in our Journal and other scientific journals. She is awarded the Medal for her article entitled "Trends in Educational Psychology" published in our Journal in January, 1959.

(3) *Dr. C. H. Shah (1960)* :—A reader in Agricultural Economics, has contributed many articles in "Indian Journal of Agricultural Society" and in "Gujarat Research Society Journal." He has been awarded a Medal for his valuable article entitled "The Basic Problem of Agricultural Development" in April, 1960 issue of the Journal.

(4) *Dr. D. B. Desai (1961)* :—Lecturer, Faculty of Education and Psychology, M. S. University of Baroda, Baroda, is awarded a Silver Medal for his article "Progressive Matrices Test (1956-Version), applied to a group of Secondary School going children in Gujarat" published in our Journal, January, 1961.

The President, Dr. Hansabehn Mehta awarded one of the medals to Dr. Smt. Madhuribehn R. Shah, others were declared awarded as those three scholars were unable to come to attend this Conference

No formal resolutions were passed this time as it was understood that the three universities were already planning research co-ordination of work in connection with their planning Research Forum Grants, and that the Government of Gujarat had in view a plan for co-ordinating research which will be further necessary when all the five universities of the State will begin to function.

Mourning Resolution :

Only the following Resolution was read :

"The members of the Gujarat Research Society deeply regret the sad demise of the distinguished members of the Society during the last nine years : (1) Sir Purushottamdas Thakurdas, a noted economist, a leading businessman, a patriot and a patron of research work and a donor member

of the Society; (ii) Dr. Krishnalal Mohanlal Zaveri, a distinguished Persian Scholar, a well-known Gujarati critic and author and honorary member of this Society; (iii) Shri Prahladjī Chandrashekhar Diwanji, a noted historian, a research scholar on Rāmāyana, and chairman of the History and Cultural Committee of the Society and Editor of History and Cultural Numbers of the Journal of the Society, (iv) Lady Vidyagauri Ramanbhai, a first lady graduate of Gujarat, a front rank social worker, a spirit behind the Gujarat Vidya Sabha, her-self an able Gujarati authoress and the president of the First Conference of the Gujarat Research Society, (v) Dr. Bhaskerbhai D. Patel, who distinguished himself as a tuberculosis specialist, a patriot, member of the Legislative Assembly and Deputy Minister in the cabinet of the earstwhile Bombay State and the present Maharashtra State; (vi) Dr. Kantilal Chaganlal Pandya, a noted scientist, Professor of Chemistry, Agra University and a literary writer, (vii) Shri Nagardas Purushottamdas Gandhi, a Professor of Mining and Metallurgy, Banaras Hindu University, (viii) Prof. Dr. Maganlal Buch, Prof. of Philosophy and once Principal of the Baroda College, a veteran scholar in the field of Indian Philosophy especially; (iv) Dr. Subbarao of Baroda Uni ; (x) Shri P. P. Pandya Govt. Archaeologist, last both at the young age. Resolution was passed with silence of two minutes. This Conference resolves that sense of regret might be conveyed to the members of their bereaved families.

Vote of Thanks

Dr. Mrs. Madhuribehen R. Shah gave a vote of thanks to Gujarat University, Chief Minister, sectional presidents, Gujarat University authorities, and delegates, while Prof. K. K. Shastree thanked all the local workers who helped in making the Conference a success.

TEA PARTY BY THE VICE-CHANCELLOR

The brilliant well lit tea party which the Vice-Chancellor Shri L. R. Desai gave in the compound of his extensive garden at 6-30 p.m. was a fitting termination of the activities of the Conference. In suitable words he thanked the selected learned research workers that had gathered together from all over Gujarat and Bombay City. They represented the best talents of the country and their co-operation is likely to lead to the most valuable results for the future of the country.

In his concluding speech, the President, Mr. P. G. Shah thanked the University authorities for their co-operation in holding the Conference and the facilities offered by them. He stated that the effort of holding these Conference was a humble contribution on behalf of the Society towards the progress of Research in region and hoped that with the branch of the Society in Ahmedabad it will be possible to make further progress in the cause of Research.

The Conference dispersed after exchange of greetings.

I. RECEPTION ADDRESS

Delivered by Dr. Smt. Hansabehn Mehta

પ્રમુખશ્રી, સન્નારીઓ અને સહગૃહસ્થો,

ગુજરાત સંશોધન મંડળની આ ચોથી પરિષદમાં આપ સર્વાનું સ્વાગત કરતાં મને બહુ આનંદ થાય છે. આ સંશોધન મંડળની ત્રીજી પરિષદ પાંચ વર્ષ પહેલાં વડોદરામાં મળી હતી તે પ્રસંગે પણ આપનું સ્વાગત કરવાનું સૌભાગ્ય મને પ્રાપ્ત થયું હતું. આ ત્રીજી અને ચોથી પરિષદના પાંચ વર્ષના ગાળામાં તો ઘણી ઘટનાઓ બની ગઈ છે. ગુજરાતમાં તેલ અને ગ્યાસનું સંશોધન થયું અને વડોદરા પાસે એને માટે રિક્કાઈનરી પણ શરૂ કરવામાં આવશે. પેટ્રોલિયમના પદાર્થોના ઉદ્યોગો શરૂ થશે અને એને અગે સંશોધન માટે નવું ક્ષેત્ર ઊભું થશે પરંતુ મહત્વની ઐતિહાસિક ઘટના તો એ બની કે ગુજરાતનું જુદું એકમ થયું અને ભારતનાં પંદર સોળ રાજ્યોમાંનું ગુજરાત એક રાજ્ય બન્યું. ગુજરાતનું એકમ થતાં ગુજરાત સંશોધન મંડળે પણ એની શાખા અમદાવાદમાં શરૂ કરી. એ શાખાના અધ્યક્ષ તરીકે હું આપનું સૌનું અત્રે સ્વાગત કરું છું.

સંશોધનની દૃષ્ટિએ છેલ્લાં પાંચ વર્ષ દરમિયાન ખાસ નોંધપાત્ર કંઈ થયું હોય એવું જાણવામાં આવ્યું નથી; જો કે એક બે વસ્તુની નોંધ લેવાનું અત્રે ઉચિત લાગે છે. વડોદરાની મહારાજા સયાજીરાવ યુનિવર્સિટીના પુરાતત્ત્વ ખાતા તરફથી સારા પ્રમાણમાં સંશોધનનું કાર્ય થઈ રહ્યું છે. સોમનાથના ખોદકામનો હેવાલ હજી બહાર પડ્યો નથી, પણ ટૂંક સમયમાં પડશે એવી આશા છે. પરંતુ શામળાજીમાં દેવની મોરી આગળના ખોદકામમાં બુદ્ધનો સ્તૂપ મળી આવ્યો છે એ શોધ મહત્વની ગણાય. બૌદ્ધ ધર્મના અવશેષો ગુજરાતમાં બહુ ઓછા નજરે પડે છે, એટલે આ શોધ ગુજરાતના ઇતિહાસ પર કંઈક અજવાળું જરૂર પાડશે એમ માની શકાય. આ શોધના કરનાર પ્રો. સુખ્યારાવનું ગયા જૂન માસમાં અકાળે અવસાન થયું એની સખેદ નોંધ અત્રે લઉં છું. એમના અવસાનથી આપણે એક સારા પુરાતત્ત્વ-સંશોધક ગુમાવ્યા છે. ગુજરાતને તો શું પણ ભારતને પણ આનાથી એક મોટી ખોટ પડી છે.

‘કોનોલોજી ઓફ ગુજરાત’ એ ગ્રંથના પ્રકાશનની સહર્ષ નોંધ લઉં છું. મહારાજા સયાજીરાવ યુનિવર્સિટીએ આ કાર્ય ડૉ. મંજુલાલ મજમૂદારને સોંપ્યું હતું. એમણે જે ત્રણ ગ્રંથોમાં આ વિષયને આવરી લેવાની યોજના વણી હતી તેમાંનો આ પ્રથમ ગ્રંથ છે. ગુજરાતનો ઇતિહાસ ન્યારે લખાશે ત્યારે એને આમાંથી ઘણી સામગ્રી મળી રહેશે. આ કાર્ય માટે આ ગ્રંથ તૈયાર કરનાર લેખકો તેમજ ડૉ. મંજુલાલને અભિનંદન આપું છું.

ગુજરાત રાજ્યમાં આજે ત્રણ યુનિવર્સિટીઓ છે અને લવિષ્યમાં બીજી બેનો ઉમેરો થશે. યુનિવર્સિટીનાં કર્તવ્યોમાંનું એક મહત્વનું કર્તવ્ય સંશોધન છે. ગયા સ્વાગતભાષણમાં મેં કહ્યું હતું તેમ યુનિવર્સિટીઓ શુદ્ધ સંશોધન—pure research ના કાર્યને મહત્વનું ગણે છે, ખાસ કરીને વિજ્ઞાનના ક્ષેત્રમાં, ન્યારે ગુજરાત સંશોધન મંડળ જેવી બિન-યુનિવર્સિટી સંસ્થાઓ applied research—એટલે રોજિન્દા વ્યવહારમાં ઉપયોગી થાય તેવા સંશોધન અંગે કાર્ય કરી રહી છે. રોજિન્દા વ્યવહારમાં ઉપયોગી થાય તેવા સંશોધનના પ્રશ્નો એટલે સમાજના વર્તમાન પ્રશ્નો. એ પ્રશ્નોને અગે સંશોધન થાય અને જે પરિણામ આવે તે સમાજને ઉપયોગી થઈ પડે એ ઉદ્દેશ

આ સંશોધન પાછળ હોય છે. ગુજરાત સંશોધન મંડળે આ દૃષ્ટિએ અનેક સંશોધન સંકલ્પો - research projects - વિચાર્યા હતા અને વિચારે છે. ગુજરાત સંશોધન મંડળે કુટુંબસ્વાસ્થ્યને પ્રથમથી જ મહત્વ આપ્યું હતું અને મુખ્યમંત્રીએ અંગે સારું કામ કર્યું હતું. એ જ પ્રમાણે અમદાવાદમાં પણ આ કાર્ય ઉપાડ્યું છે. અમદાવાદનાં કેટલાંક નક્કી કરેલાં કુટુંબોના સ્વાસ્થ્યની તપાસ ડૉ. ઝાલા અને પ્રો. રાવળ કરી રહ્યા છે. અમદાવાદનાં કેટલાંક કુટુંબોના ખોરાકની તપાસનું કામ ડૉ. ઝાલાએ માથે લીધું છે. અમદાવાદમાં પાંચ વર્ષની અંદરનાં બાળકોના મરણપ્રમાણ અંગે પણ ડૉ. ઝાલા તપાસ કરી રહ્યા છે. બાળકોની દાકતરી તપાસ શાળાઓમાં થાય છે, પરંતુ ખરેખરી અગત્યની વસ્તુ તો એ છે કે આ દાકતરી તપાસ કુટુંબોની થવી જોઈએ. કુટુંબમાં કોઈને એવો રોગ હોય જે બાળકને વારસામાં મળે કે એનો બાળકને ચેપ લાગે. આ લયથી બાળકને વિમુક્ત કરવા કુટુંબની દાકતરી તપાસ થાય તો પહેલેથી બાળક માટે સાવચેતી લઈ શકાય. આવાં કુટુંબ-સ્વાસ્થ્ય કેન્દ્રોની ખાસ જરૂર છે. એમાં કુટુંબનિયોજનનો પણ સમાવેશ થાય. ફાતારો રોગીઓના રોગ મટાડવા ઇસ્પતાલો બાંધવા પૈસા આપે છે, પરંતુ રોગને મૂળથી ડામવા આવાં કુટુંબ-સ્વાસ્થ્ય કેન્દ્રોને થોડાંયે નાણાં આપશે તો એથી વિશેષ ફાયદો થશે.

સ્વાસ્થ્યને અંગે તો ખાસ સંશોધનની જરૂર છે લશ્કરમાં કે પોલીસમાં નોકરી લેવા માટે સ્વાસ્થ્યનું અમુક ધોરણ હોય છે. આ ધોરણને હિસાબે ગુજરાત ઘણું પાછું રહ્યું છે. લશ્કરમાં જોડાવાને તૈયાર છતાં જુવાનોને સ્વાસ્થ્યની દૃષ્ટિએ નકારવામાં આવ્યા છે. ગુજરાતનું ધોરણ જ જુદું પડે છે કે પછી ગુજરાતી જુવાનોમાં સ્વાસ્થ્યનો અભાવ છે એ જાણવું જરૂરી છે. આવા સંશોધન માટે કદાચ ગુજરાત સરકાર પણ મદદ કરે એમ હું માનું છું.

ગુજરાતની આદિમ જાતિઓ વિશે પણ સંશોધન મંડળે ઠીક કામ કર્યું છે. દુબળાઓ વિશે તો શ્રી. ચોપટલાલ શાહે પુસ્તક પણ પ્રગટ કર્યું છે. એ ઉપરાંત વાઘરી વગેરે જાતિઓની તપાસ પણ કરાવી છે. આ રીતે કચ્છના બની પ્રદેશના માલધારીઓની તપાસ પણ કરવા જેવી છે. ગુજરાત સિંધના સીમાડાના પ્રદેશના આ વતનીઓ મુસ્લિમ ધર્મ પાળે છે. એમનાં જીવન વિશેની, એમની હસ્તકળા કારીગરી વિશેની માહિતી રસપ્રદ છે. એ વિશે શાસ્ત્રીય સંશોધન થાય તો ઘણું જાણવાનું મળે. અમદાવાદ શાખાએ ગુજરાતની જુદી જુદી બોલીઓની ભાષાકીય તપાસ શ્રી. કે. કા. શાસ્ત્રીને સોંપી છે. ગ્રિયર્સનના Linguistic Servey of India પુસ્તકમાં ગુજરાતી ભાષા વિશે છે, પરંતુ ત્યાર પછી એની ચોખ્ખી તપાસ થઈ નથી ગુજરાતમાં બાર ગાઉએ બોલી અભ્યાસ એ સિદ્ધાંતે આ તપાસ ઘણી આવશ્યક છે.

ગુજરાતનાં મુખ્ય ગામોની સામાજિક ને આર્થિક તપાસ થવાની જરૂર છે. આયોજન પંચે આ અંગે કેટલાંક શહેરોમાં તપાસ કરાવી પણ છે; પરંતુ બધાં આવી તપાસ થઈ ના હોય તેવાં ગુજરાતનાં મોટાં ગામોમાં આ સંશોધન કરવાની જરૂર છે. agro-economics એટલે ખેતીના અર્થશાસ્ત્ર સંબંધે પણ ગુજરાતમાં સંશોધન થાય છે, પણ એ યોજનાઓ સમસ્ત ગુજરાતને આવરી શકી છે કે કેમ એની ખબર નથી.

આમ વિવિધ ક્ષેત્રે ગુજરાતમાં સંશોધન થાય છે; પરંતુ જે ક્ષેત્રમાં આજે સંશોધનની જરૂર છે તે હજારો ક્ષેત્ર છે. સિમેન્ટને બદલે ચૂનાનો ઉપયોગ એ વિદ્યે ધી. કાંટાવાળાએ સંશોધન કરવાનું સ્વીકાર્યું છે. બાંધકામ અંગે પુષ્ટિ સંશોધનની જરૂર છે. ખાસ કરીને કામીબુ પ્રદેશમાં-

ગામડામાં સસ્તાં પણ આળોહવાને અનુકૂળ અને સગવડવાળાં ઘરો કેવાં હોવાં જોઈએ એ માટે સંશોધન જરૂરી છે. શાળાઓ માટે પણ સસ્તા મકાનો કેવા હોય એ માટે પણ સંશોધન ઇચ્છવા યોગ્ય છે

આમ વિવિધ ક્ષેત્રે સંશોધન મંડળ કાર્ય કરી શકે; પરંતુ આ બધાં કાર્ય માટે સંસ્થાને પોતાનું મકાન હોય અથવા પૂરતી જગ્યા ભાડાના મકાનમાં પણ મળે તો એનું કાર્ય સરળતાથી કરી શકે. ગુજરાત સરકારે પદરહજાર જેટલી નાની શી રકમ મકાન માટે ટોકન ગ્રાંટ તરીકે આપી છે એટલે મકાન માટે વિશેષ કાળો ઉધરાવવાની જરૂર રહેશે સંશોધનનું કાર્યક્ષેત્ર જોતાં મોટી રકમની અપેક્ષા રખાય તો એ અનુચિત નથી

ફરીને આપ સર્વનું સ્વાગત કરું છું અને અમારી મહેમાનગીરીમાં ક્ષતિ હોય તો એની અત્યારથી જ માફી માગી લઉં છું.

ડૉ. જીવરાજ ના. મહેતાનું પ્રમુખપદેથી પ્રવચન

મિત્રો,

ગુજરાતના સંશોધનકારોની આ ચોથી પરિપક્વ પ્રમુખપદ મને આપવા બદલ હું એના વ્યવસ્થાપકોનો આભારી છું. આ પરિપક્વમાં આવેલા પ્રતિનિધિઓ અને મહેમાનોનું, પ્રથમ તો, હું સ્વાગત કરું છું

આ પરિપક્વના મુખ્ય ઉદ્દેશોમાં, ૧ સંશોધનકાર્ય હાથ ધરવું અને એને વ્યવસ્થિત પાયા ઉપર મૂકવું, ૨ સંશોધનકાર્યને એવડાતું અટકાવવું, ૩. સંશોધન માટે નાણાં ઊભાં કરવાં અને ૪ આ પ્રદેશના પ્રશ્નોનું સંશોધન દ્વારા નિરાકરણ કરવાના કાર્યમાં જનતાનો રસ પેદા કરવો; આનો સમાવેશ થાય છે ચોથો ઉદ્દેશ જરાયે ઓછા મહત્વનો નથી ગુજરાત સંશોધન મંડળ આ ઉદ્દેશો પાર પાડવા ઘણું સારું કાર્ય કરી રહ્યું છે. આજના સમાજના અગત્યના સામાજિક પ્રશ્નોમાં મંડળે ઘણી અગત્યની મોજણી હાથ ધરી છે અને હું બાંછું છું તે પ્રમાણે મંડળ પાસે ભવિષ્યમાં હાથ ધરવા મહત્વાકાંક્ષી યોજનાઓ પણ છે આ યોજનાઓ પાર પાડવા જરૂરી સાધનસામગ્રી એકઠી કરવામાં મંડળને સફળતા મળે એમ હું ઇચ્છું છું. આ મંડળની પ્રવૃત્તિમાં ગુજરાત સરકારને ઘણો જ રસ છે અને એની ખીજ જવાબદારીઓને અનુરૂપ રહી આ મંડળને એ મદદરૂપ બનવાની દરેક કોશિશ કરશે

આધુનિક જીવનમાં વિજ્ઞાન અગત્યનો ભાગ ભજવે છે એ તો હવે સર્વમાન્ય હકીકત છે. સમગ્ર દેશના લોકોમાં વૈજ્ઞાનિક મનોવૃત્તિનો વિકાસ થાય એ એથીયે વધુ અગત્યનું છે. વૈજ્ઞાનિક સંશોધનના પરિણામરૂપ જે પદ્ધતિ અપનાવાય છે તેનાથી ઉત્પાદનમાં ઘણો વધારો થાય છે. એટલે જ અર્થતંત્રના બધા જ વિભાગોને આવરી લેતો સંશોધનનો એક સમતોલ કાર્યક્રમ આપણા દેશના વિકાસ માટે જરૂરી છે. ખીજા વિશ્વયુદ્ધ પહેલાં ભારતમાં વૈજ્ઞાનિક અને ઔદ્યોગિક સંશોધન પ્રત્યે બહુ જ ઓછું ધ્યાન અપાયું હતું, મોટે ભાગે કેટલીક વિદ્યાપીઠોમાં અને વિજ્ઞાન સંસ્થાઓમાં અમુક અશે સંશોધન થતું હતું ખીજા વિશ્વયુદ્ધ દરમિયાન જ્યારે ભારત લશ્કરી દળો માટે પૂર્વમાં પુરવઠો પૂરો પાડનાર મુખ્ય કેન્દ્ર બન્યું ત્યારે વિદેશી સરકારને વૈજ્ઞાનિક અને ઔદ્યોગિક સંશોધન

પરત્વે ધ્યાન આપવાની વિશેષ દરજ્જા પડી. આઝાદી મળ્યા બાદ અને પંચવર્ષીય યોજનાઓ ઘડાતાં સંશોધનના ઉત્તેજન માટે વધુ સગવડો પ્રાપ્ત થઈ છે. દેશના વિવિધ ભાગોમાં રાષ્ટ્રીય પ્રયોગશાળાઓ અને સંશોધન સંસ્થાઓની સ્થાપના થઈ છે એ આપ સૌ જાણો છો. ખીણ યોજનાના ગાળા દરમ્યાન વૈજ્ઞાનિક અને ટેકનોલોજિકલ સંશોધન માટે રૂ. ૭૨ કરોડની રકમ ખર્ચવામાં આવી હતી અને ત્રીજી યોજનામાં રૂ. ૧૩૦ કરોડની રકમ અંદાજે ખર્ચવાની જોગવાઈ રખાઈ છે.

ગુજરાતમાં પણ આપણે સંશોધન પ્રત્યે ખેદરકાર રહ્યા નથી; જો કે માનવજીવન વિજ્ઞાન અને ટેકનોલોજિકલ ક્ષેત્રમાં રાજ્યમાં સંશોધનની જરૂરિયાત જોતાં એ સતોપકારક કાંઈ શકાય નહિ. આપણે ગુજરાતમાં ત્રીજી યોજનામાં રૂ. ૩.૫૫ કરોડની રકમ સંશોધન અને મોનિટરી અર્થે ખર્ચવાનું વિચાર્યું છે. આ યોજનામાં ખેતીવાડી, જમીનવિકાસ, પશુપાલન, જંગલો, મત્સ્યઉદ્યોગ, સિંચાઈ, ઔદ્યોગિક સંશોધન, તખીખી અને જાહેર આરોગ્ય, શિક્ષણ, કામદાર અને સમાજકલ્યાણને લગતા કાર્યક્રમો છે. ગુજરાતમાં રાજ્ય ઔદ્યોગિક સંશોધન સમિતિ પણ સ્થાપનામાં આવી છે. આ સમિતિ સંશોધનકાર્યકરોને એમના સંશોધનકાર્યમાં સહાય કરે છે.

રાજ્ય અને કેન્દ્ર સરકારોએ સંશોધનની મુખ્ય જવાબદારી લેવાની છે એમાં કોઈ શંકા નથી; આમ છતાં સંશોધનના ઉત્તેજન માટે ઉદ્યોગોએ પણ કાળો આપવાનો છે અને કહેતાં આનંદ થાય છે કે ભારતમાં કેટલીય અગ્રગણ્ય ઔદ્યોગિક સંસ્થાઓએ રાષ્ટ્રીય પ્રયોગશાળા સ્થાપવામાં નોંધપાત્ર ફાળો આપ્યો છે, જેમાં અમદાવાદ શહેરના ઉદ્યોગપતિઓને ખાસ ધન્યવાદ ઘટે છે; જેમકે અમદાવાદ શહેરમાં મિલ ઉદ્યોગે પોતાના ઉદ્યોગના સંશોધન માટે એક ઉત્તમ દાખલો આપ્યો છે. “અટીરા”ને આપણે સૌ જાણીએ છીએ. તાજેતરમાં આ ઉદ્યોગોની સહાયથી નેશનલ ઇન્સ્ટિટ્યૂટ ઓફ ડિઝાઈન અને ઇન્ડિયન ઇન્સ્ટિટ્યૂટ ઓફ મેનેજમેન્ટ નામની બે સંસ્થાઓની સ્થાપના થઈ છે. મને ખાતરી છે કે ખાનગી ક્ષેત્રમાં ઉદ્યોગોનો વધુ ને વધુ વિકાસ થતાં વધુ ઉદ્યોગપતિઓ સંશોધન-માનસવાળા બનીને સંશોધનની પ્રગતિ માટે વિશેષ ને વિશેષ ફાળો આપશે.

લોકોમાં વૈજ્ઞાનિક વિકાસ પ્રત્યે રસ ઉત્પન્ન કરવા જે ‘ખીજું’ સક્રિય પગલું લેવાયું છે તેનો પણ હું અત્રે ઉલ્લેખ કરીશ, અને એ “વિજ્ઞાન મંદિર યોજના” છે. ખીણ યોજના દરમ્યાન દેશમાં આવાં ૩૯ મંદિરો સ્થાપવામાં આવ્યાં છે અને ત્રીજી યોજનામાં ૧૬૦ વધુ મંદિરો સ્થાપવાની સંભાવના છે.

અત્યાર મુઘી મેં મારા પ્રવચનમાં વૈજ્ઞાનિક સંશોધનની અગત્ય વિશે અને દેશમાં સરકાર દ્વારા એના ઉત્તેજન માટે થયેલા પ્રયાસોનો સંક્ષિપ્તમાં ઉલ્લેખ કર્યો છે. વૈજ્ઞાનિક અને ટેકનોલોજી-વિપયક સંશોધન સમાજને એના ભૌતિક જીવનધોરણને ઊંચું આણવામાં કેટલું ઉપયોગી છે એ વિશે વધુ કહેવું જરૂરી નથી. સાથે સાથે સામાજિક, આર્થિક અને વહીવટી પ્રશ્નોમાં પણ સંશોધનનું મહત્ત્વ જરા પણ ઊતરતું નથી. શિક્ષણ અંગેના ખર્ચને જેટલું અગ્રસ્થાન અપાય છે તેટલું જ સ્થાન સમાજના અભ્યાસ અંગેના ખર્ચને આપવું જરૂરી છે. આ આગતમાં આપના જેવી સંસ્થાએ દેશના વિકાસમાં અગત્યનો ફાળો આપવાનો છે. મને જાણીને આનંદ થાય છે કે આપની સંસ્થાએ કેટલીક સંશોધન યોજનાઓ અને મોનિટરી દાખ ધરી છે, જે પ્રશ્નો સમજીને એનું નિરાકરણ કરવામાં મદદરૂપ થશે.

આ સંસ્થાની અનેકવિધ પ્રગતિઓ અને હેતુઓ આપે એક પ્રકાશનમાં દર્શાવ્યાં છે, તેમની

એક હેતુ ગુજરાત રાજ્યને લગતી લગભગ તમામ વિષયો અંગે આધારભૂત માહિતી એકત્ર કરી એને પ્રગટ કરવાનો છે. આપણા રાજ્યમાં પણ ચોક્કસ નીતિ ધડવા માટે જે સંપૂર્ણ માહિતીની જરૂર છે તે માહિતી મળી શકતી નથી. આથી આપની આ સંસ્થાએ આધારભૂત માહિતી ભેગી કરવાની અને એને પ્રસિદ્ધ કરવાની જે પ્રવૃત્તિ હાથ ધરી છે તે સરકારને એમની નીતિ નક્કી કરવામાં બહુ જ મદદરૂપ બની રહેશે.

આપની સમક્ષ વિશાળ કાર્ય છે એટલે આ સંસ્થામાં જે શક્તિ અને સાધનો છે તેનો પૂરતો ઉપયોગ થાય અને કંઈપણ દુર્વ્યય ન થાય એ જોવું જરૂરી છે. તેમજ બુદ્ધિશક્તિ જે અહીં ઉપલબ્ધ છે તેનો શક્ય તેટલો ઉપયોગ થાય એ પણ ધ્યાનમાં રાખવું જરૂરી છે. આ સંબંધમાં જે મોજણી અને કાર્યક્રમો હાથ ધરવામાં આવે એનો સામાન્ય મનુષ્ય સરળતાથી સમજી શકે તેવી ભાષામાં વ્યાપક પ્રચાર કરવો જોઈએ.

આ સંસ્થા એક સંશોધન સંસ્થા હોવા ઉપરાંત સામાજિક સેવામાં પણ રસ લે છે એ જાણી મને આનંદ થાય છે આજે ભારતને આવી વધુ ને વધુ સામાજિક સેવા સંસ્થાઓની જરૂર છે, પરંતુ આમાં પણ સંશોધનક્ષેત્રની જેમ જ કાર્ય બેવડાઈ ન જાય એની સંભાળ રાખવાની જરૂર છે એ ઉપરાંત આવી સંસ્થાઓને એક સામાન્ય દૃષ્ટિ હોવી જરૂરી છે. અને અમુક અમુક ક્ષેત્રોમાં સેવા આપવા એમણે નિષ્ણાત થવું જોઈએ સાથે સાથે આવી સંસ્થાઓએ તાલીમ, સંશોધન, માહિતીનું પ્રસારણ અને સામયિકોનું પ્રકાશન જેવાં ક્ષેત્રોમાં પોતાની પ્રવૃત્તિઓ અરસપરસ સંકલિત કરવી જોઈએ.

ફરીથી એક વાર આ પ્રસંગે ઉપસ્થિત થવા માટે મને જે તક આપવામાં આવી છે તે માટે હું આપનો આભાર માનું છું. હું આપની પરિપક્વ સજ્જતા ઇચ્છું છું, અને મને ખાતરી છે કે ગુજરાતની પ્રજાને એમના અનેકવિધ પ્રશ્નો હલ કરવામાં એ ઉપયોગી નીવડશે.

‘જય હિન્દ’

૩. ૫૧૦૦૦૭ નું દાન જાહેર કરતી વખતનું

શ્રી. રતિલાલ પ્રોફેસરનું આખ્યાન

માનનીય ડૉ. શ્રી. જીવરાજભાઈ સાહેબ, આદરણીય શ્રી હંસાબહેન, મુંબઈ શ્રી મુનશીજી તથા ગુજરાત સંશોધન મંડળના પ્રણેતા શ્રી પોપટભાઈ તથા અન્ય સદસ્યહસ્થે,

ગુજરાત સંશોધન મંડળ છેલ્લા પચીસ વર્ષથી પ્રગતિમય કામ કરી રહ્યું છે. મંડળ તરફથી આરંભના સંશોધનનું કાર્ય ચાલે છે કથળેલ શરીરની દવા કરવી એના કરતાં શા કારણથી શરીર કથળે છે એનું સંશોધન કરવું એ વધારે જરૂરી છે

મંડળના પ્રણેતા શ્રી. પોપટભાઈ શાહ અમોને મળ્યા અને બધી વિગત સમજાવી અમો આવા જ કોઈ કાર્ય માટે અમારા પૂ વડીલ માસા શ્રી નાનશા કાળિદાસ દલાલનું નામ કાયમ રહે એ રીતે વિચારતા હતા, ત્યાં શ્રી. પોપટભાઈ સાહેબે એક પેથોલોજિકલ લેબોરેટરીની જરૂરિયાત

અમો વહીવટદારોને સમજાવી અને આ કાર્ય માટે દાનની જરૂરિયાતનો ખ્યાલ આપ્યો. આ માટે અમોએ મહર્ષિ શેઠ નાનશા કાળિદાસ વતી રૂ. ૫૧૦૦૦ નું દાન આપવાની ઓફર કરી. એ રીતે કે ગુજરાત સંશોધન મંડળ એક પેથોલોજિકલ લેબોરેટરી શરૂ કરે. એ લેબોરેટરી “શેઠ શ્રી નાનશા કાળિદાસ દલાલ પેથોલોજિકલ લેબોરેટરી” એ નામથી ઓળખાય. અને આ લેબોરેટરીમાં મધ્યમવર્ગને મફત અગર તો બિલકુલ નહીં ખર્ચે સંશોધનનું કાર્ય કરી આપવામાં આવે.

આજનો આ પ્રસંગ અમારા માટે એક ધન્ય પ્રસંગ છે, કારણ કે અમારા પૂ. વડીલ માસાની ઇચ્છાઓને મૂર્ત સ્વરૂપ આપવાના અમારા પ્રયત્નોને આજે સફળતા મળી છે. આજે સારથે ગુજરાતમાં એઓની સખાવતો છે અને વાર્ષિક રૂ. ૧૨૫૦ ની નોકરીથી પોતાના જીવનની શરૂઆત કરનાર એઓએ પોતે પોતાની જાત માટે સાદું જીવન ગાળી જનસાભાર્થે એ ખર્ચી સમાજ માટે એક જ્વલંત દૃષ્ટાંત પૂરું પાડ્યું છે. અત્યાર સુધીમાં એઓની મિલકતમાંથી આશરે ત્રણ લાખ રૂપિયા જેટલી રકમ જાહેર સખાવતોમાં વપરાઈ છે, તેમાં મુખ્ય—

૫૫૦૦૦ અમદાવાદ શહેર દાણાપીઠમાં આવેલું વર્નાક્યુલર હાઈસ્કૂલનું મકાન જેની ઉદ્ઘાટન-વિધિ સરદારશ્રી વલ્લભભાઈના હાથે થઈ હતી.

૧૩૦૦૦૦ વિસલપુર ગામમાં ચાલતું સાર્વજનિક દવાખાનું.

૬૫૦૦૦ શેરળજર તથા દશાનાગર જ્ઞાતિમાં શિક્ષાતી વ્યક્તિઓ માટે કુડ માટે.

૪૦૦૦૦૦ મદિરોના જીર્ણોદ્ધાર તથા નિભાવ ખર્ચ માટે.

૩૬૦૦૦૦ માંડવીની પોળ પ્રસૂતિગૃહ માટે, જેની ઉદ્ઘાટનવિધિ માનનીય શ્રી જીવરાજભાઈના હાથે ગઈ સાલ તા. ૨૬-૨-૬૧ ના રોજ થઈ હતી.

એઓશ્રી ગરીબોને અને શિક્ષાતા માણસોને મદદ કરવામાં ખૂબ જ માનતા હતા એઓએ આ વાત અમો બંને ભાઈઓને ખૂબ જ સમજાવેલી અને એમના મૃત્યુ બાદ એમની મિલકતનો આ રીતે જ ઉપયોગ કરવા આદેશ આપેલો.

માંડવીની પોળનું પ્રસૂતિગૃહ આજે ગરીબ મધ્યમવર્ગ માટે ખૂબ જ આશીર્વાદરૂપ નીવડ્યું છે, અને એ જ રીતે આ પેથોલોજિકલ લેબોરેટરી પણ નહીં ખર્ચે જનતાને ખૂબ રાહતરૂપ બનશે એ આશાથી જ આ દાન આપવાની અમે ઇચ્છા સેવી છે. અને ગુજરાત સંશોધન મંડળ અમારો આ હેતુ ધ્યાનમાં રાખી ગરીબ મધ્યમવર્ગને થોડા રાહત આપશે એ જ અમારી વિનંતિ છે.

અમારી આ યોજના માટે સલાહ સૂચન આપી અમારું આ અલ્પદાન સ્વીકારવા માટે અમારા મુરખી શ્રી. પોપટભાઈ શાહે જે સહકાર આપ્યો છે તે માટે અમો શેઠ નાનશા કાળિદાસ દલાલના વહીવટદારો ખૂબ જ આભારી છીએ.

આજના મુખ્ય મહેમાન અને ગુજરાત રાજ્યના મુખ્ય પ્રધાન માનનીય શ્રી. જીવરાજભાઈ આ સંસ્થા સાથે મૂળથી સંકળાયેલ છે અને એના દ્રસ્ટી છે, તેમજ ખીજા નામાંકિત અગ્રમુખ્ય વિદ્વાનો અને નિષ્ણાતો સંસ્થાના કાર્યકરો છે, તેઓને અમારા આ કાર્યથી સમાજકલ્યાણની પ્રગતિ-ઓમાં પ્રોત્સાહન મળશે. અમારા આ અલ્પ દાન કરતાં અનેક ગણું દાન સંસ્થાને મળે એવી પરમકૃપાળુ પ્રભુ પ્રત્યે અમારી પ્રાર્થના છે.

સંસ્થા દિનપ્રતિદિન પ્રગતિ સાથે અને સમાજને ઉપયોગી નીવડે એ જ પ્રાર્થના.

‘જય સિંદ’

GUJARAT AS THE CENTRE OF INTEGRATIVE FORCES

Dr. Kanaiyalal M. Munshi

I congratulate the Gujarat Research Society on the excellent work it has done in bringing together research-minded people to pioneer a cooperative effort. The work has been conducted mainly through the self-less leadership of Shri Popatlal Shah, who has been the life and soul of the Society.

Research work in connection with Gujarat is being carried on, besides the Gujarat Research Society, by several other institutions - *Atira* at Ahmedabad, the Institute of Agriculture at Anand, at the Baroda University and at the Bharatiya Vidya Bhavan in Bombay. The time, in my opinion, has arrived when there should be a Federal Council, which would pool and coordinate all such research work

Research work is intended to advance the frontiers of knowledge; therefore, it should always be of the best. There is no second-best in research. That means that the best available men should be equipped with the requisite libraries and laboratories to carry on their work unfettered by other demands

The tendency common in this country to carry on research perfunctorily should be arrested. Unfortunately, in this country, research degrees in hundreds are showered upon students whose knowledge and capability are of a limited character. If this continues it will deny us the membership of the great republic of knowledge which is bringing researchers of the world together.

Research is not a regional affair and not even a national concern. It is international. In the matter of research the world is one. Research in one country has its reaction on other countries. For instance, pedigreed Kankrej cows of the Institute at Anand are in demand in Russia and Brazil for developmental purposes.

In the matter of research we should remember that the world cannot be fragmented. To be really valuable, the standard of research should be uniform throughout, so that the achievement should gain acceptance in the whole world. Only such a world republic of research can enlarge the frontiers of knowledge.

Research, again, by itself, cannot be carried on in an ivory tower. The work should be associated with training, for researchers must have live experience of the real problems involved before they can successfully carry on their work. Research, therefore, has to be associated with teaching work in some manner or other without putting an undue strain on the research work.

That is where the universities come in. Universities in their ultimate are not intended for turning out village workers nor retessionals. Nor are they

mere service stations for meeting the technological needs of the community. They are temples of knowledge and knowledge in these days can only flourish in their post-graduate department. Universities are, therefore, world institutions pledged to the advancement of knowledge.

It may be that the needs of a country requires the introduction of a national bias in university education at the lower level. At the higher level of research, however, there has to be a common language, a common idiom, a common standard and common achievement. It is, therefore, necessary that a student at the graduate stage should have knowledge of a world language like English sufficient to study research works of the highest order and to express himself well in it.

English is no longer the language of England. It is a world language. All over the world English with two or three other languages provides the essential medium of research. If you cut off English from a university, you reduce a world institution into a regional one. No longer would it be a university.

I am glad that the Gujarat Research Society has established a branch in Ahmedabad. I hope by its coming here coordination of research will be stimulated and a Federal Council of Gujarat Research become a practical proposition.



Articles

Presented at

Fourth Conference of Research Workers for Gujarat

HISTORY SECTION

REPORT

તા. ૨૦-૧૦-૧૯૬૨

વિભાગીય બેઠકોના કામકાજનો આરંભ તા. ૨૦ મી ને શનિવારે સવારે થયો. સવારના ૯-૦૦ થી ૧૨-૦૦ માં ઇતિહાસ, પુરાતત્ત્વ અને ભાષાશાસ્ત્ર એ ત્રણ વિભાગોની બેઠક રાખવામાં આવી હતી. વિભાગીય પ્રમુખોનાં વ્યાખ્યાનોનો લાભ સહુ શ્રોતાઓને મળે એ હેતુથી ત્રણેય પ્રમુખોનાં વ્યાખ્યાન એક સંયુક્ત બેઠકમાં રાખવામાં આવ્યાં. ઇતિહાસ-વિભાગના પ્રમુખપદે ભારતીય વિદ્યાના જ્ઞણીતા વિદ્વાન પ્રો. રસિકલાલ છે. પરીખ હતા. એમણે ટાઈ લિખિત વ્યાખ્યાન તૈયાર કર્યું નહોતું, પરંતુ નિયંધોના વાચન પછી પોતાનું વક્તવ્ય રજૂ કરવાનું રાખીને પુરાતત્ત્વ વિભાગના પ્રમુખ ડૉ. સાંકળિયાને પોતાનું વ્યાખ્યાન શરૂ કરવા વિનંતિ કરી હતી. પુરાતત્ત્વ વિભાગના પ્રમુખ તથા ભાષાશાસ્ત્ર વિભાગના પ્રમુખનાં વ્યાખ્યાન પૂરાં થયા બાદ ઇતિહાસ-વિભાગના નિયંધોનું વાચન પણ એ સંયુક્ત બેઠકમાં જ શરૂ થયું હતું.

ઇતિહાસ વિભાગમાં કુલ ૧૨ નિયંધ હતા. એમાંથી ૯ નિયંધ ગુજરાતને લગતા હતા, બ્યારે બાકીના ત્રણ ભારત સંબંધી હતા, એ નિયંધ ગુજરાતના પ્રાગ્-ઇતિહાસ અને આદ્ય-ઇતિહાસ વિશે હતા. એ નિયંધ ભારતીય લિપિને લગતા હતા એક નિયંધ કલન્યોતિપને વિશે હતો. ગુજરાતના મધ્યકાલીન મહાન સત ચક્રધર વિશે એ નિયંધ હતા : એક અગ્રેજીમાં અને બીજાને ગુજરાતીમાં ૧૬ મા શતકના ગુજરાતના ઇતિહાસના સાધન તરીકે ઉપયોગી એવા એક કારસી અથવા વિશે એક નિયંધ હતો ક્ષત્રપ, મૈત્રક, ચાવડા, સોલંકી, સુલતાન—એવા ટાઈ મુખ્ય રાજવંશ વિશે એકેય નિયંધ નહોતો, પરંતુ સૌરાષ્ટ્રના સ્થાનિક રાજવંશોમાંના વાઘેર વંશ વિશે એક નોંધપાત્ર નિયંધ હતો પ્રભાસપાટણ તથા દેલવાડાના દસ્તાવેજો વિશેનો નિયંધ અને સૌરાષ્ટ્ર, કચ્છ અને ગુજરાતમાં લખાયેલ પ્રાચીન હસ્તલિખિત ગ્રંથો અને ચિત્રકળાના નમૂનાઓ વિશેનો લેખ સ્થાનિક મૂળ સાધન-સામગ્રીના સંશોધનના સૂચક છે. સુરેખાહરણની કથાને લગતો નિયંધ એ કથાની ઉત્પત્તિ અંગે ગુજરાત અને દક્ષિણ ભારત વચ્ચેનો સંબંધ દર્શાવે છે

આ બાર નિયંધોમાંથી છ નિયંધોના લેખક અધિવેશનની એ બેઠકમાં હાજર હતા. એમાં પહેલાં શ્રી. રાયકરે ચક્રધર વિશેનો નિયંધ વાંચ્યો અને પછી શ્રી. કનૈયાલાલ ભા. દવેએ એ જ વિષયને લગતો પોતાનો નિયંધ સક્ષેપમાં રજૂ કર્યો સંયુક્ત બેઠકમાં સર્વ વિભાગોના નિયંધ-વાચનનો લોભ રખાતાં વચ્ચાતા નિયંધો પર ચર્ચા કરવાનો સમય રહેતો નહોતો, એટલું જ નહિ, નિયંધો પણ સક્ષેપમાં રજૂ કરવા પડતા. આથી ત્રીજા નિયંધ ડૉ. ઝેડ. એ. દેસાઈએ અન-નિરુના સકર વિશે માહિતી આપી, તેના વાચન બાદ વિભાગવાર બેઠકોનું વિભાગીકરણ કરવાનું નક્કી થયું.

ચાહ—વિરામ બાદ બીજા ત્રણ નિયંધ વાંચાયા. અધ્યા દવેએ ‘લલિતવિસ્તર’માં આપેલી લિપિઓની યાદી વિશે વિવેચનાત્મક જણાવટ કરી બાદ ડૉ. હરિપ્રસાદ શાસ્ત્રીએ ભારતીય અંક

ચિહ્નો વિશેના પોતાના નિબંધમાં પ્રાચીન લિપિમાં પ્રયોજાયેલી અંકચિહ્નોની પ્રાચીન તથા અનુકાલીન પદ્ધતિ વિશે, ભારતીય અંકોના અરબસ્તાનમાં અને યુરોપમાં થયેલા પ્રસાર વિશે, અંકચિહ્નોની લેખન-દિશા વિશે તેમજ કેટલાંક અંકચિહ્નોના અક્ષરાત્મક સ્વરૂપ વિશે જણાવટ કરી. છેલ્લે, શ્રી. અમૃત વસંત પંડ્યાએ પોતાના નિબંધના અંગ્રેજી સારાંશને વિસ્તારીને ગુજરાતની પ્રાગ્-આર્ય સંસ્કૃતિ વિશે મૌખિક વક્તવ્ય રજૂ કર્યું. પછી શ્રી. પટેલે છેલ્લા બે નિબંધોમાં આવેલા આર્ય, દ્રવિડ, શન્ય ઇત્યાદિ શબ્દોની ઉત્પત્તિ વિશે પોતાની કલ્પનાઓ વ્યક્ત કરી અને શ્રી. પંડ્યાએ ચક્રધર વિશે વિશેષ માહિતી પૂરી પાડી.

નિબંધ-વાચન પૂરું થતાં વિભાગીય પ્રમુખશ્રીએ એનો ઉપસંહાર કર્યો અને ઇતિહાસ-વિષયક વક્તવ્યો તથા લખાણો રજૂ કરતાં મૂળ સાધનસામગ્રીના પુરાવા પર મદાર બાંધવાની જરૂરિયાત દર્શાવી શુદ્ધ ઇતિહાસ-સંશોધનની શાસ્ત્રીય પદ્ધતિ પર ભાર મૂક્યો. એક દરે આ વિભાગમાં નિબંધોની સંખ્યા અને વિષય-વિવિધતા સતોષકારક હતી.

હ. ગં. શાસ્ત્રી

GUJARAT.....ITS PROTO-HISTORY

Shri R. T. Parikh, Baroda

(Summary)

Gujarat is in lime light archaeologically, since a decade. Various explorations and excavations carried out by the enthusiastic offices of the Archaeological Survey of India and Govt. of Gujarat and by the learned institutions working in the field and results thus obtained have changed the whole conceptions of the Indian History.

Geography position of Gujarat has played a significant role in the development of material cultures in this part of India. One of the important factors responsible for growth of cultures is its long sea coast. The other geographic factor, which is responsible for the growth of various cultures, is its relative isolation from other parts of India.

No Neolithic culture site has yet been discovered in Gujarat and the culture at the present stage of our knowledge, that preceded the proto-historic culture, was the microlithic culture of the last stone age. A good number of sites of this late stone age culture has been discovered in many parts of Gujarat, the most important of them are, Lānghanaḥ in the Mehsana District of North Gujarat, Baroda, and Rangpur in the Zalavad district of Saurashtra.

The culture that followed the late stone age was, the full fledged Harappa Culture, many sites of which have been found in the different parts of Saurashtra peninsula and on the Narbada and Tapti estuaries. The most outstanding and unique site of this culture, that has been discovered in any part of India, after the partition, and which has

attracted the attention of the intellegentia and the common man alike is 'Lothal', a mound situated near the village Saragwala, of the Dholka Taluka of the Ahmedabad District

At Lothal, Shri Rao brought to light two periods of occupation with a break, which he has divided into five phases, the first four of which belongs to mature Harappa Culture while the fifth one, the settlement of which was established after a great flood belongs to the degenerated Harappa Culture

At Rangpur, Shri Rao has brought to light three periods of occupation. Period I is represented by the pre-pottery microlithic culture, on which, after a gap of 4'Ft., Harappans came and settled. Period second has been divided into three sub phases, IIA, IIB & IIC.

Rojdi in Saurashtra is also a late Harappan site and two periods of occupation have been brought to light by late Shri P. P. Pandya of Guj Govt. Period I has been divided into three sub phases, IA, IB & IC.

Late Dr. Subbarao and Shri Pandya brought to light five periods of occupation at Somnath in Saurashtra. Period one has been divided into IA & IB.

At Lākhābāwal the same excavators brought to light two periods of occupation The earliest period was characterised by the late Harappan Pottery. While at Amra, three miles away from Lākhābāwal, same excavators found also the late Harappan pottery from earlier level and confirmed the evidences found at Lākhābāwal

If we take into consideration the relative chronology of the 'proto-historic Cultures of Gujarat, it would be seen that, Harappans occupied the coastal areas, when other parts were inhabited by the communities, who were using microliths

The Proto-historic Gujarat had mutual contacts and relations with the outside world and with the rest of the country although the region is geographically isolated from rest of the parts of the Indian sub-continent

We have yet to solve two problems one of them is the problem of black and red ware and the other is who were the people, who used the lusturous red ware pottery Only future researches in field would be able to throw some light some day.

SHRI CHAKRADHARA : A MEDIAEVAL SAINT FROM GUJARAT

Prof. Yashvant A. Raiker, M. A., Baroda

(Short Summary)

Like Dayananda Sarasvati and Mahatma, there is one more earlier great son of Gujarat, born in the 13th century A.D. He is Shri Chakradhara, the founder of the Mahānubhāva cult. His followers have produced the earliest Marathi prose and as an inspirer of a great religion and literary activity Chakradhara has made a permanent name in the history of the Deccan. Yet he has to find his due place in the history of Gujarat.

The main source of his life history is the *Lilā-Charitra*, a collection of episodes about him, made by his disciples. Shri Chakradhara hails from Broach and was earlier known as Haripāladeva, a son of Visaldeva, who seems to be some princely land-lord. At a young age Haripāladeva deserted the worldly life due to religious detachment, and wandered in Andhra and Maharashtra till his 90 or so. Then he spent his last active eight years in Maharashtra for spreading the gospel of non-violence, detachment, good conduct and devotion. He based his teachings on *Gītā* and maintained that the multiplicity of rituals and deities can never give salvation. He did not believe in social inequality and offered *sannyāsa* to all including women and *śūdras*. He was a fearless thinker, a selfless teacher and a practical scholar but no revolutionary. He was ahead of his time and brought the best minds of the period under his sway. But he invited enmity of the orthodox who left no stone unturned to put him down. He was tortured and seems to have been executed by king Rāmadeva. He is believed to have been living an eternal life in the Himalayas. Let not Gujarat forget one of its worthy sons!

"A'N-NŪRU'S-SĀFIR" AS A SOURCE FOR THE 16th CENTURY HISTORY OF GUJARAT

Dr. Z. A. Desai, Nagpur

(Summary)

In this paper it is intended to describe in brief an Arabic work on biography composed in 1602-03 A. D. at Ahmedabad by Shaikh Muhyi'u'd-Dīn 'Abdu'l-Qādir a'l-'Aidārūs, whose father had come to India from Yaman in 1551 A. D. and had settled first at Broach and finally at Ahmedabad. This work is a chronological list and account of

important learned men, kings, grandees, etc. and also of some political events and curious happenings and natural phenomena like appearance of comets, shooting stars, floods, draughts, etc., relating to South Arabia and India. The period covered by the book is the tenth century of the Hijra which commenced in 1495 and ended with 1592 A. D. While some of the information regarding political and to a lesser extent cultural events may be found in historical works, the fact remains that the author supplies some matters of details and accounts that are not generally known. Particularly his account, though very brief, of some natural happenings in Gujarat, is unique.

THE LIST OF SCRIPTS IN LALITAVISTARA

Prof. S. S. Dave, Vallabh Vidyānagar

(Summary)

The paper-writer initially states that the list is not complete. There is neither order nor classification. Sometimes an orderly sequence is traceable. The scripts can be grouped on various bases as Indian, foreign etc. The paper-writer tries to group some of them in a 'flora-fauna' group. While doing so, he tries to show that Brāhmī and Kharoashthī do not deserve the place of primacy accorded to them by the author. He incidentally suggests that the use of the word 'Śakārī' for the Mālava scripts helps us to fix the date of the work. He further suggests that some of the scripts are only 'styles', while some others are styles of composition like royal or commercial correspondence, or short forms used in arithmetic or the letter-cutters' art. Some of the scripts are very likely languages. The author gives a faithful picture of the script-craft in his time-1st century B. C. As the list is a miraculous recital by the young Buddha, it pictures the script-craft as in 5th century B. C. The author is true to the facts, and the names of doubtful meaning are very few. Hence, according to the paper-writer, the script-craft had an indigenous and praiseworthy growth. Hence also, according to the paper-writer, the old theory of the introduction of the art of writing from abroad, and the view that it led to a cultural revolution should be re-assessed, and if possible, changed.

ગુજરાત અને દક્ષિણ ભારતનો સંબંધ દર્શાવતી

સુરેખાહરણની કથા

પ્રો. ડૉ. શિવલાલ જેસલપુરા, અમદાવાદ

ગુજરાતમાં સુરેખાહરણની કથા જાણીતી છે. દૂંકમાં એ નીચે પ્રમાણે છે :—

બલરામની પુત્રી સુરેખા સાથે બાળપણમાં અભિમન્યુના વિવાહ કરવામાં આવ્યા હતા, પણ દ્યુતમાં સર્વસ્વ હારીને પાંડવો વનમાં ગયા પછી બલરામે આ સંબંધ તોડી નાખી, સુરેખાનાં લગ્ન દુર્યોધનના પુત્ર લક્ષ્મણની સાથે કરવાનો નિર્ણય કર્યો. આ વાતની ખબર પડતાં અભિમન્યુ સુરેખાનું હરણ કરવા તૈયાર થયો અને એ માટે દ્વારકા જવા નીકળ્યો. માર્ગમાં હિડિમ્બાવન આવ્યું, તેમાં અભિમન્યુ ભૂલો પડ્યો. રસ્તો શોધવા એણે અગ્ન્યસ્થ છોડ્યું. તેથી વનમાં અગ્નિ પસર્યો. એ જોતાં ગોટરગચ્છ (ભીમ અને હિડિમ્બાનો પુત્ર ઘટોતકચ) એની સામે લડવા આવી પહોંચ્યો. એણે અભિમન્યુને મારીને બેભાન બનાવ્યો. હિડિમ્બાને આની ખબર પડતાં, પોતાના પિતરાઈ ભાઈને મારવા બદલ એણે ગોટરગચ્છને ઠપકા આપ્યો અને અભિમન્યુને મદદ કરવા આજ્ઞા આપી.

અભિમન્યુ અને ગોટરગચ્છે જઈને દ્વારકા નગરી બહાર પડાવ નાખ્યો અને સુરેખાનું હરણ કરવા યુક્તિઓ રચવા માંડી. આ વખતે લક્ષ્મણની જાન આવી પહોંચી હતી. ગોટરગચ્છે માયાવી વિદ્યાથી કૌરવોને ખૂબ હેરાન કર્યા, પછી કૌરવ યુવતિનું રૂપ લઈને સુરેખાને એ જોઈ આવ્યો. ફરી લક્ષ્મણની માતા ભાનુમતીનું રૂપ લઈને બલરામના મહેલમાં એ ગયો અને મહેલ જોવાના બહાને સુરેખાને અગોશીમાં લઈ ગયો. અહીંથી સુરેખાને ઉપાડી એ ઊડ્યો અને અભિમન્યુ પાસે આવી પહોંચ્યો. સુરેખાને લઈ અભિમન્યુ હિડિમ્બાવનમાં ગયો.

પાછળ ગોટરગચ્છે સુરેખાનું રૂપ લીધું અને લગ્નમંડપમાં ધૂમટો વાળીને લક્ષ્મણની સમક્ષ એ આવી જોડો. ત્યાં હસ્તમેળાપ વખતે ધૂંધટમાં એણે પ્રાણીઓનાં મુખ ધારણ કર્યાં. એ જોઈને લક્ષ્મણ ગભરાયો અને લગ્ન કરવા એણે ઇન્કાર કર્યો. સગાંસંબંધીઓએ બહુ બહુ સમજાવ્યો ત્યારે એ મંડપમાં જોસી રહ્યો. લગ્નનો વિધિ પૂરો થયો ત્યારે ગોટરગચ્છે ત્રિકરાળ રાક્ષસનું સ્વરૂપ ધારણ કરી સુરેખાના હરણની વાત કહી, અને હિડિમ્બાનાવનમાં એ નાસી ગયો.

યાદવો અને કૌરવો એની પાછળ ધસી ગયા સુદ્ધ થયું, પણ ગોટરગચ્છની માયાવી વિદ્યા આગળ એમનું કાંઈ આશ્રય નહિ. પછી અભિમન્યુ સુરેખા સાથે લગ્ન કરી થોડાં વર્ષ વનમાં રહ્યો.

ગુજરાતી ભાષામાં આ કથાને આલેખવાનો સૌથી પ્રથમ પ્રયત્ન કવિ વીરજીએ ‘સુરેખા-હરણ’ (ઇ. સ. ૧૬૬૪) માં કર્યો છે. આ કાવ્ય ‘પ્રાચીન કાવ્ય’ ત્રિમાસિક-વર્ષ ૫ માં પ્રગટ થયેલું છે. ત્યાર પછી લખાયેલ ‘સુરેખાહરણ’ની ક્રમાંક ૮-૬, ૧૨-૩ અને ૧૯૬ ની, કર્તાનાં નામ અને રચના સમય વિનાની, તુદ્ધ હસ્તપ્રતો ગુજરાત વિદ્યાસભા, અમદાવાદમાં મળે છે. પણ એ બધી કૃતિઓ વીરજીના ‘સુરેખાહરણ’ના અનુકરણ જેવી છે. નડિયાદની ડાહી લક્ષ્મી લાધખેરીની હ. પ્ર. નં. ૧૨૭ માં વીરજીના ‘સુરેખા હરણ’નાં જ શરૂઆતનાં કડવાં છે. ત્યારબાદ ઈ. સ. ની ૧૯ મી સદીના ઉત્તરાર્ધમાં થઈ ગયેલા બાલ વલ્લભરામ સુરજરામે ‘સુરેખા હરણ’ આખ્યાન પદ્ધતિએ રચ્યું છે. આ બધાં કાવ્યોમાં ઉપર મુજબની કથા થોડાક વિગતભેદ સાથે મળે છે.

હિંદી, રાજસ્થાની, બંગાળી કે મરાઠી ભાષામાં આ કથા વિશે કોઈ કૃતિ મળી આવતી નથી. એ પ્રદેશોમાં લોકકથારૂપે પણ એ પ્રચલિત હોવાનું જાણવા મળતું નથી.

કોઈ સંસ્કૃત કૃતિમાં પણ આ કથા મળી આવતી નથી. માત્ર હિંદિમ્યા સાથે ભીમના લક્ષ્મી હકીકત મહાભારતના આદિપર્વમાં તેમજ ઘટોત્કચની માયાવી વિદ્યા અને એનાં પરા-ક્રમેનાં વર્ણન દ્રોણપર્વમાં મળી આવે છે.

તો પછી પ્રશ્ન એ થાય છે કે આ કથા આવી ક્યાંથી ?

એનું પગેરું દક્ષિણ ભારતમાં મળી આવે છે. કન્નડ ભાષામાં આ કથાને નિરૂપતાં યક્ષગાન મધ્યકાળમાં રચાયેલાં છે. એમાં બલરામની પુત્રી શશિરેખાનું હરણ અભિમન્યુ ઘટોત્કચની મદદથી કરે છે તેનું વર્ણન આવે છે. સોળમી સદીમાં આ ભાષાના કવિ ગોવિંદે એના ‘ચિત્ર-ભારત’ નામના ગ્રંથમાં આ કથાને આલેખી છે. મળયાળમ ભાષાપ્રદેશમાં આ કથા લોકકથારૂપે પ્રચલિત છે. એની રૂપરેખા આ પ્રમાણે છે :—

સુભદ્રા અને રુક્મિણી ગર્ભવતી હતી ત્યારે એક દિવસ એમણે એનું નક્કી કર્યું કે રુક્મિણીને પુત્રી અને સુભદ્રાને પુત્ર જન્મે તો એમના લગ્ન કરવાં. રુક્મિણીને જે પુત્રી જન્મી તેનું નામ સુદરી અને સુભદ્રાને જે પુત્ર જન્મ્યો તેનું નામ અભિમન્યુ રાખવામાં આવ્યું. સમય જતાં સુંદરી લગ્ન લાયક થઈ ત્યારે બલરામે એને દુર્યોધનના પુત્ર લક્ષ્મણ સાથે પરણાવવાનું નક્કી કર્યું આ વાતની ખબર પડતાં રુક્મિણી અને સુંદરીને દુઃખ થયું. એમણે શ્રીકૃષ્ણને આ સુસીમતમાંથી માર્ગ કાઢવા વિનંતિ કરી બીજી બાજુ અભિમન્યુએ સુંદરી સાથે પોતાના લગ્ન કરવા ઘટોત્કચની સહાય માગી. લક્ષ્મણકુમારની જાન આવી ત્યારે ઘટોત્કચે કોઈને ખબર ન પડે તેમ એને એક ઘરમાં પૂરી દીધો. લગ્નનું સુહૃત્ આવતાં લક્ષ્મણકુમારની શોધાશોધ થઈ, પણ ક્યાંય એનો પત્તો ખાધો નહિ. લગ્નનું સુહૃત્ વીતી જતું હતું, તે કેમ જવા દેવાય ? આવી સ્થિતિમાં સહુએ મળીને સુંદરીનાં લગ્ન અભિમન્યુ સાથે કર્યાં. લગ્ન પતી ગયા પછી લક્ષ્મણને ઘર બહાર કાઢવામાં આવ્યો.

કન્નડ ભાષાની, મળયાળમ ભાષાપ્રદેશની અને ગુજરાતી ભાષાની આ કથામાં કેટલીક સમાનતા રહેલી છે ત્રણેમાં શશિરેખા, સુંદરી અને સુરેખા એ નામ લગભગ સમાનાર્થ છે. ત્રણેમાં શશિરેખા, સુંદરી કે સુરેખાનું હરણ અભિમન્યુએ ઘટોત્કચની મદદથી કર્યાંની સમાન હકીકત છે અને કથામાં બલરામે સુરેખા કે સુંદરીને દુર્યોધનના પુત્ર લક્ષ્મણ સાથે પરણાવવાનું નક્કી કર્યાના પ્રસંગ છે અનેમાં ઘટોત્કચે લક્ષ્મણને હેરાન કર્યાના સમાન પ્રસંગો છે.

કન્નડ ભાષાની કથા ગુજરાતની કથા કરતાં પ્રાચીન પણ છે

ગુજરાત અને કન્નડ ભાષાપ્રદેશ વચ્ચે સાંસ્કૃતિક, ધાર્મિક અને રાજકીય સંપર્ક પ્રાચીન સમયથી હોવાનું જાણીતું છે. ‘એલચી’ ‘ઓડ’ અને ગિદ્દીદંડાની રમતમાં વપરાતા ‘વકટ’ ‘લેણ’ આદિ શબ્દો કન્નડમાંથી હોવાનું શ્રી. નરસિંહરાવ દિવેટિયાએ દર્શાવ્યું છે.^૧ મધ્યકાલીન સાહિત્યમાં પ્રચલિત ‘બાવનાચંદન’ કે ‘બાવનચંદન’ શબ્દમાં ‘બાવન’ (=ચંદન), શબ્દ કન્નડ હોવાનું, ‘ઓળગાણો’ (=ભંગી) કન્નડ શબ્દ ‘ઉળિંગ’માંથી આવ્યાનું, જૂની ગુજરાતીમાં પ્રચલિત ‘ગૂડી’ (ધજન)નું મૂળ કન્નડ શબ્દ ‘ગુડી’માં હોવાનું ડૉ. ભોળીલાલ

૧. ‘ગુજરાતી ભાષા અને સાહિત્ય’ (વિદ્વસન કાઈલો લોન્ડનિકલ લેક્ચર્સ), ભાગ ૧, પૃ. ૫૯-૬૨

સાંડેસરાએ બતાવ્યું છે.^૨ વિક્રમના નવમા સૈકા પહેલાં કર્ણાટકનો એક દિગંબર સાધુસમુદાય સૌરાષ્ટ્રમાં, ખાસ કરીને વઢવાણ આસપાસના પ્રદેશમાં સ્થિર થયાની અને એ સંઘના આચાર્ય હરિષેણે વઢવાણમાં સં. ૯૮૯ માં ‘બૃહત્કથાકાશ’ નામે સંસ્કૃત કથાકાશ રચ્યાની હકીકત એમણે આપી છે.^૩ સિદ્ધરાજની રાજસભામાં વિવાદ થયેલો તેમા કર્ણાટકના દિગંબર આચાર્ય કુમુદચંદ્ર વાદી હતા.^૪ પુલકેશી ખીજ (સાતમે સૈકા) જેવા કર્ણાટકના ચૌકુચ રાજાઓનું દક્ષિણ ગુજરાત ઉપર આધિપત્ય હતું. કર્ણાટકના રાષ્ટ્રકૂટોએ દક્ષિણ ગુજરાતમાં એક સ્વતંત્ર રાજ્ય સ્થાપ્યું હતું.^૫ સિદ્ધરાજ જયસિંહની માતા મયણદેવ કર્ણાટકી હોવાની ઐતિહાસિક વિગત જાણીતી છે. ગુજરાતના જ્યેષ્ઠીમદ્દ જ્ઞાતિઓ અને એમનું મદ્દયુદ્ધ એ ગુજરાતે કર્ણાટકને કરેલું એક લાક્ષણિક પ્રદાન છે.^૬

ગુજરાત અને દક્ષિણ ભારત વચ્ચેનો આ સંપર્ક જેના કનડ ભાષાની-દક્ષિણ ભારતની સુરેખાહરણની કથા ગુજરાતના દક્ષિણ વિભાગમાં જાણીતી થઈ હોય અને ખાનદેશમાં આવેલ ખુરહાનપુરમાં પોતાની રચનાઓ કરી રહેલા વીરજીના સાંભળવામાં એ આવી હોય એ સંભવિત છે. ગુજરાત અને ભારતના ઘણા પ્રાંતો વચ્ચે પારસ્પરિક સંપર્ક વિશે આપણને ઘણી માહિતી મળે છે, તેમ ગુજરાત અને કનડ પ્રદેશ-દક્ષિણ ભારત વચ્ચેના સંપર્કનો એક મહત્વનો પુરાવો સુરેખાહરણની કથા છે.

ગુજરાતનો મહાન સંત

ચક્રધર

(દ્વંદ્વસાર)

શ્રી. કનૈયાલાલ ભાઈશંકર દવે, પાટણ

ભારતના પશ્ચિમ વિભાગ-આપણા ગુજરાત પ્રાંતે પ્રાચીન યુગથી ધર્મ, સંસ્કાર અને સંસ્કૃતિમાં સારો એવો વિકાસ સાધ્યો હોવાનાં પ્રમાણો મળે છે ગુજરાત કક્ત અર્થપ્રધાન પ્રદેશ છે એવી સામાન્ય માન્યતા ભલે ખીજ પ્રાંતવાદીઓ માને, પરંતુ ગુજરાતે કેવળ વેપારથી અર્થસિદ્ધિ પ્રાપ્ત કરી સંસ્કાર અને ધર્મને કદી વિસારેલ નથી. ગુજરાતના વિશાળ સાગર-કાંઠે, એનાં ખંભાત, ભરૂચ, માંડવી, કંડલા, વલ્લભિ, વેરાવળ, દ્વારકા. વ. અદરે દ્વારા દેશ-પરદેશ જઈ ખીજ દેશોનાં સંસ્કાર અને સંસ્કૃતિને સમજી એનું આદાનપ્રદાન પણ કરાતું. સાહસિક ગુજરાતીઓ આ રીતે સંસ્કારસમૃદ્ધિમાં પણ મોખરે રહ્યા છે. આ સિવાય ગુજરાતે અનેક વિદ્વાનો અને અમૂલ્ય મહાન જ્યોતિષીશ ભારતને ચરણે ધર્યા છે. ભગવતી નર્મદા-મૈયાના જળમાં એવી અમોઘ શક્તિ રહેલી છે કે એના તીરપ્રાંતે વસેલ ગામે અને શહેરોમાંથી અનેક ભારતવિખ્યાત દિવ્ય વિમૂર્તિઓ બહાર આવેલી છે. આવા નરપુંગવો પૈકી દારવણ-કાયાવરોહણમાં થયેલ પાશુપત પંથના આઘ આચાર્ય લક્ષ્મીશ, માદિખતીના ભવ્યપુરુષ મંડન-મિશ્ર જે પાછળથી “સુરેશ્વર” નામે દારિકા શારદાપીઠના આઘ આચાર્ય બન્યા, અને ભગવાન આઘશંકરાચાર્યના ગુરુ ભગવતપૂજ્યપાદ ગોવિંદ ગુરુ વ. ને મુખ્ય ગણાવી શકાય.

૨. ‘સપ્ત અને અર્ધ,’ પૃ. ૧૫૧-૧૫૨. ૩. ‘સપ્ત અને અર્ધ,’ પૃ. ૧૫૫. ૪. ‘મધ્યભારતના સાહિત્ય પ્રવોહ,’ પૃ. ૮૬. ૫. ‘સપ્ત અને અર્ધ,’ પૃ. ૧૫૪. ૬. ‘જ્યેષ્ઠીમદ્દ જ્ઞાતિ અને મદ્દયુદ્ધ’ (ડૉ. ભોજીલાલ સારેસરા)

આ સિવાય ભરૂચ-પ્રાચીન ભૂગુક્ટમાં “ચક્રધર” નામના મહાન સંત થઈ ગયા છે, જેમણે સારાએ ભારતમાં મહાનુભાવ પંથનો પ્રચાર કરતાં એ સંપ્રદાયના ઇષ્ટદેવ તરીકે સ્વીકારાયા છે. એમનું મૂળ નામ હરિપાલદેવ, પિતાનું નામ માલદેવ. આ માલદેવ ને રાજ ગણાવ્યા છે, પણ એ કોઈ નાની ઠકરાતના રાજ હશે એમ લાગે છે. વાઘેલા વંશના અર્જુનદેવના મંત્રી માલદેવ થયા જેમની ઉપાધિ રાણક હતી આ માલદેવના પુત્ર હરિપાલદેવ, તેને ત્રણ સ્ત્રીઓ હતી. એ વિદ્વાન તો હતા જ, પરંતુ સાથે સાથે વીરપુરુષ પણ થયા છે જેમણે પોતાના પિતાની સાથે કેટલીક લડાઈઓમાં ભાગ લઈ વિજય પ્રાપ્ત કર્યો હતો. વિશળદેવ વાઘેલાના રાજકાળમાં પણ આ પિતાપુત્રે રાજકીય દષ્ટિએ કેટલોક ભાગ લીધો હતો. હરિપાલદેવ જ્ઞાતિએ નાગર બ્રાહ્મણ, એમને સંસારની અસારતા સમજતાં ઘેરથી ચાલી નીકળ્યા અને રામદેવની યાત્રાએ જવા વિચાર્યું રસ્તામાં મધ્યપ્રદેશના ઋદ્ધિપુર ગામ રોકાયા. ત્યાં એમને મહાનુભાવ પંથના આદ્ય સ્થાપક ગોવિંદ પ્રભુનો મેળાપ થયો. એમના ઉપદેશથી આકર્ષાઈ હરિપાલદેવે મહાનુભાવ પંથની દીક્ષા લીધી અને સન્યાસી બન્યા. એમનું દીક્ષા વખતે ચક્રધર નામ રાખ્યું. એમણે ભગવાન દત્તાત્રેયની ઉપાસના કરી સ. ૧૩૨૦ માં પ્રભુનો સાક્ષાત્કાર મેળવ્યો. મહાનુભાવ પંથ નાનકડા વર્તુલમાં જ એ વખતે હતો તે “ચક્રધર”ના પ્રચારથી ખૂબ ફૂલ્યો ફાલ્યો, અને એમનો એવો પ્રભાવ પડ્યો કે એ પંથના લોકો એમને ઇષ્ટદેવ તરીકે માનવા લાગ્યા. ફક્ત નવ વર્ષની કારકિર્દીમાં ચક્રધર દેવસ્વરૂપ મનાયા, અને એમનો પંથ મહારાષ્ટ્ર, મધ્યપ્રાંત, આંધ્ર, અને ઠેક કાબુલ સુધી ફેલાયો. સ. ૧૩૨૯ માં એઓ અદરિકાત્રમની યાત્રાએ ગયા ત્યાંથી એઓ પાછા ફર્યા નહિ અને ત્યાં જ દેહત્યાગ કર્યો. એમણે આપેલ આખ્યાનોનો સંગ્રહ એમના ભક્તોએ કર્યો જે “લીલાચરિત્ર”થી વિખ્યાત છે. એના ઉપર વિવેચન થયે બીજો ગ્રંથ પાછળથી લખાયો એનું નામ “સૂત્રપાઠ.” આ બન્ને ગ્રંથો મહાનુભાવ પંથનાં મુખ્ય-માનનીય શાસ્ત્રો છે. મહાનુભાવ પંથના સ્થાપક ગોવિંદ ગુરુ હતા, પરંતુ એ પંથના ઉપાસ્ય દેવ તરીકે “ચક્રધર” એમના સમાજમાં અદ્ભુત સ્થાન પ્રાપ્ત કર્યું એ લોકો મુખ્ય દત્તાત્રેયના ઉપાસક હોવા છતાં “ચક્રધર”ને ભગવાન શ્રીકૃષ્ણસ્વરૂપ માની એમની ઉપાસના કરે છે. ટૂંકમાં, ગુજરાતના ભુલાયેલા આ એક મહાન જ્યોતિર્ધર પોતાના પ્રાંતમાંથી નીકળી દૂર દૂર સુધી અદ્ભુત પ્રતિષ્ઠા પ્રાપ્ત કરતાં, ભગવાન શ્રીકૃષ્ણ જેવું સ્થાન એમના સંપ્રદાયમાં મેળવી, ગુજરાતની પ્રતિષ્ઠાને ગૌરવવંતી બનાવી છે.

સૌરાષ્ટ્રના ઇતિહાસમાં ચડેલા રાજ્યકર્તાઓમાંના—ભુલાઈ ગયેલા વાઘેર રાજવંશીની કડીબદ્ધ વંશાવલિ

શ્રી. કલ્યાણરાય ન. જોશી, દ્વારકા

દ્વારકા અને આસપાસનાં સ્થળોના અસલી ઇતિહાસના થરો ઉકેલવા કરેલા અનેક પ્રયાસોનું એક નિશ્ચિત સ્વરૂપવાળું સંશોધન-અમદાવાદમાં મળનાર સંશોધન કાર્યમાં રસ લેનારાના મળતા સંમેલનમાં રજૂ કરતાં મને સન્તોષ થાય છે, ઇતિહાસના અભ્યાસીઓને આજે નહિ તો ભવિષ્યમાં આ વંશાવલિ ઉપયુક્ત નીવડશે જ ઘણા એમ માનતા આવ્યા છે કે વાઘેર સરદારો કેવળ ચાંચિયાગીરી-લૂટફાટ-બહારવટ કરનાર જ હતા; પરંતુ એ માન્યતા સર્વાંગે સાચી નથી. વાઘેર સરદાર ભગભગ પાંચ સદી સુધી ઓખામડળના પ્રદેશમાં સત્તાધારી રાજાઓ-ગરાસિયા-હતા.

વાઘેરનો ઇતિહાસ અનેક અંધારપછેડાએ ઢંકાયેલો છે તેને પ્રકાશમાં લાવવા મેં ખૂબ પ્રયાસ કર્યો છે. સત્ય જડે છે અને હાથમાંથી સરી પડે છે એવી એ શરૂવીર પ્રજ્ઞની કથાઓ છે, તેને વ્યવસ્થિત રૂપમાં-જેવી મને સમજાઈ છે તેવી ને તેવી-મૂકવાનું કામ મેં લગલગ પૂરું કર્યું છે-મારા જીવનના ઊતરતા કાળે એ હકીકત પુસ્તકરૂપે મુકાઈ જશે-તો મને સન્તોષ થશે. એ પુસ્તક સત્વરે ગુજરાત આગળ મૂકવા મેં ગયા સપ્ટેમ્બરની ૧૪ મી તારીખે વડોદરામાં સાહિત્યપ્રેમી સભા સમક્ષ વચન આપ્યું છે તે પાળવા મારા ચાલતા પ્રયાસો પૈકીનો એક ભાગ તે આજનો વિષય છે.

ઝોખામંડળ (દ્વારકા)ના વાઘેર રાજ-માણેકવંશની વંશાવલિ

જિયોજી કચ્છના રાવ

હમીરજી બેટના-અરાંભડાના રાજની
રાણીના ભાઈ

ઝોખાના વાઘેર સરદાર માલણ કાલાને-ત્યાં
હેરોલ રજપૂતની કન્યા દીકરી તરીકે ઊછરી
હતી- તેની સાથે-અરાંભડા ગામે બહેનને ત્યાં
પરણ્યા-અને ઝોખામંડળમાં સ્થિર થઈ
વસ્યા, અને માણેક ઉપનામ રાખ્યું.

આંખો
(આંખલિયા
આહેરનો મૂળ
પુણ્ય)

રાજપાલ
સણોસર
(પીંડારિયા)

ગડિયો

સરિયો
(ખંભાળિયા પાસે
સરિયા (સલાયા)-
ના વાઘેર)

રાંચો

ગડિયો દ્વારકા ભલવંડો ભૂપાલ

રાયા રાયકોટ રચિયો પીંઢારે રાજપાલ. [બારોટ]

રીણો

સામલો

સુરો

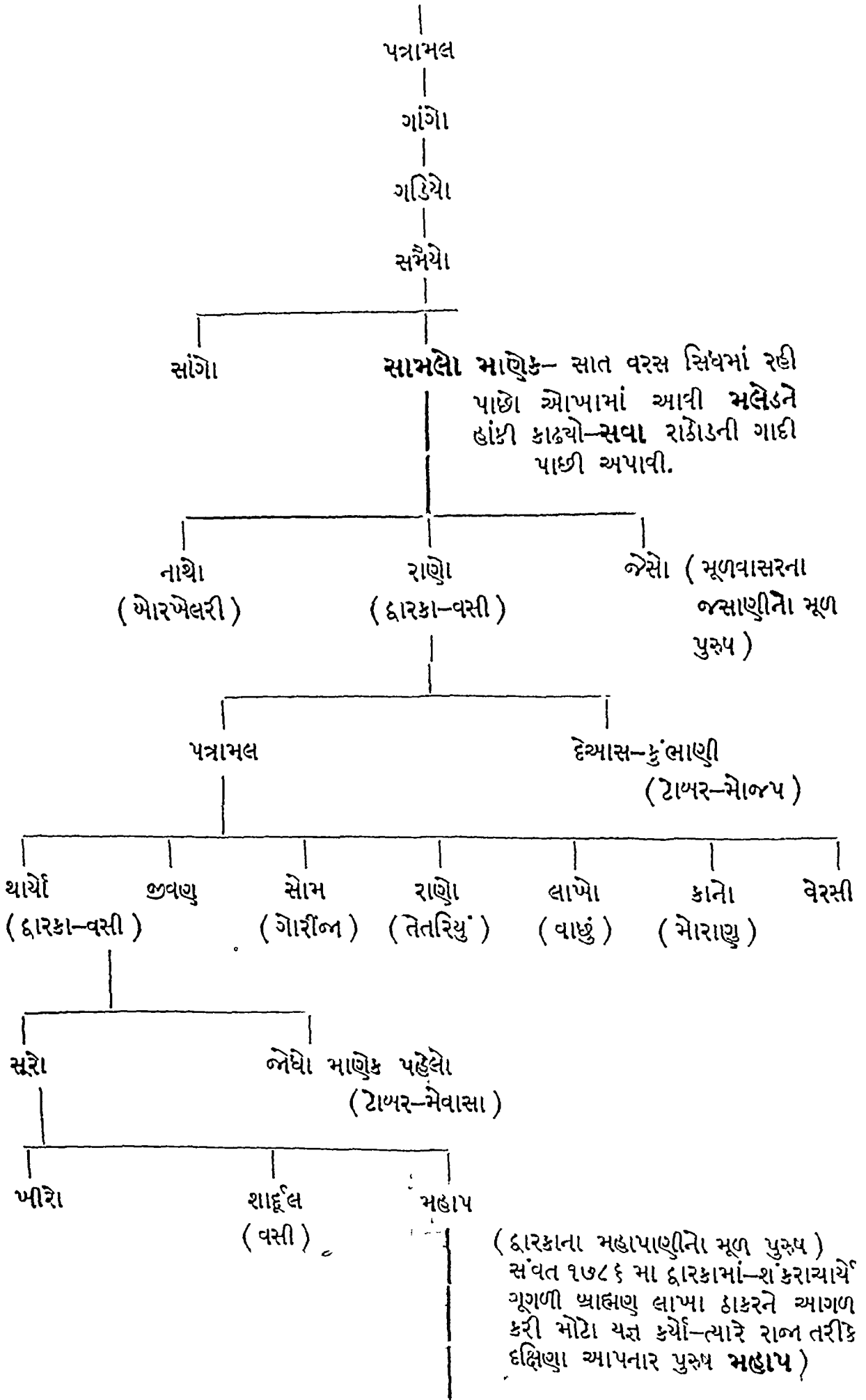
બીયો

વેરસી

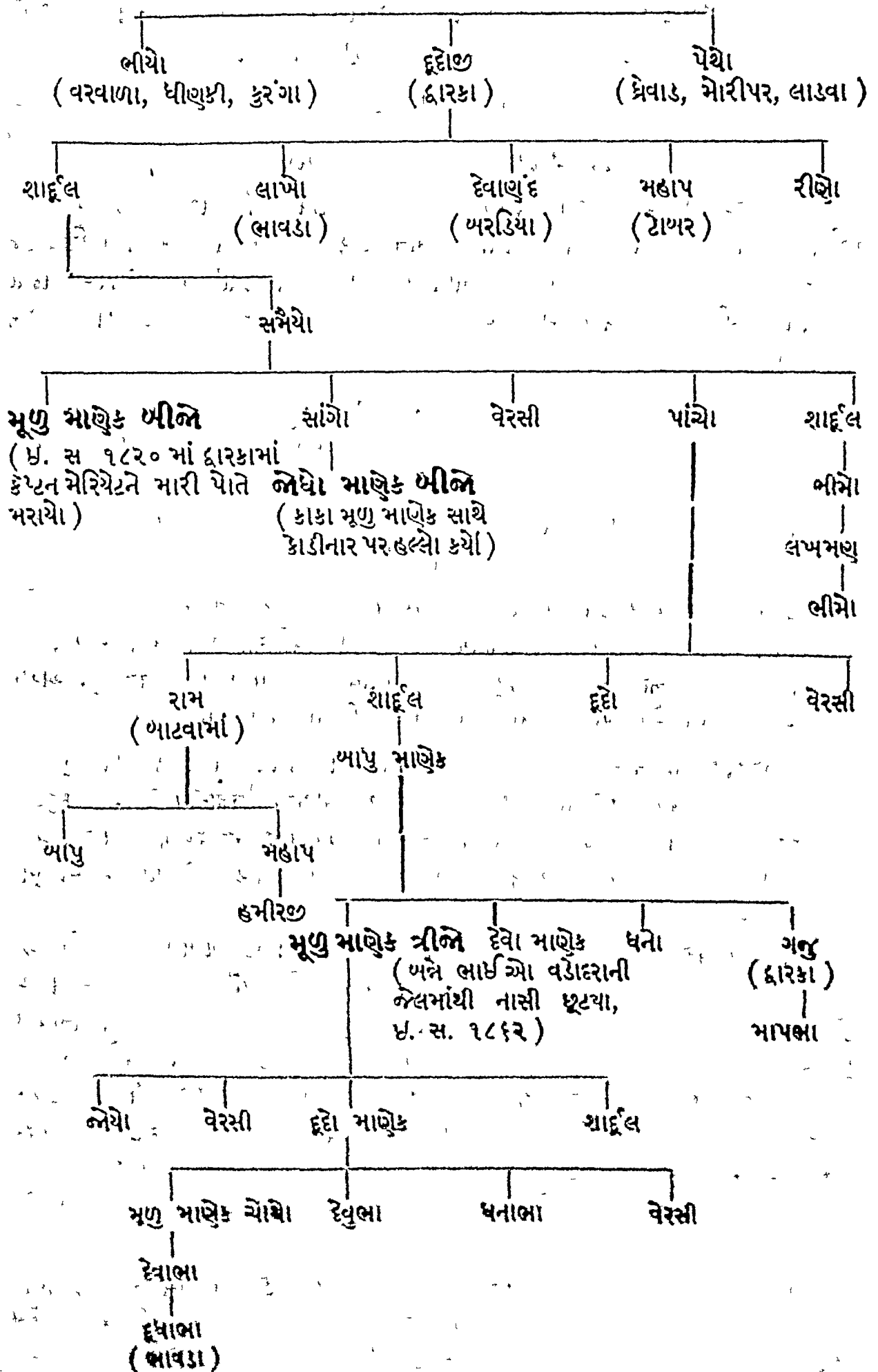
હોદો

મૂળવો -(રાવ દેવાસ સાથે ધીંગાણું બેસ્યું)

પહેલો મૂળ માણેક



३७



સૌરાષ્ટ્ર, કચ્છ અને ગુજરાતમાં લખાયેલ. પ્રાચીન હસ્તલિખિત ગ્રંથોનો, અને ચિત્રકળાના નમૂનાઓનો તારીખવાર નિર્દેશ

કલાનો ઇતિહાસ

પં. જયશંકર ડા. શાસ્ત્રી, રાજકોટ

૧ * શ્રીમદ્ ભાગવત (મૂલ માત્ર) પત્ર ૧૦-લિપિસામ્ય તેમજ વળાંક જોતાં આ પુસ્તક બારમી શતાબ્દીમાં લખાયેલું હશે. જનશ્રુતિ અનુસાર ગુજરાતના મહારાજા શ્રી સિદ્ધરાજ જયસિંહની માતા શ્રી મીનળદેવીએ ૧૦૮ ભાગવત પુસ્તકોનાં દાન કર્યાં હતાં તે પૈકી-પુસ્તકનાં આ પત્રો હોઈ શકે (અધ્યાય-દશમ પૂર્વાધ'. ૪૦-૪૧-૪૨ નાં ત્રૂટિત પત્રો. કાગળ ઉપર લખેલાં છે.

૨ કોષ: પત્ર ૨૦ થી ૨૯. લિપિસામ્ય જોતાં આ પુસ્તક બારમી શતાબ્દીમાં લખાયેલું હશે. આ પુસ્તકનાં પત્રો બપોળે ચોટાડીને એક બનાવેલ છે- કાગળ ઉપર છે શબ્દકોષ, પણ ક્યા કોપનો આ ભાગ છે એ સમજવાનું રહે છે.

૩ વેદાન્તદર્શનમ્ । કાગળ ઉપર બાર પત્રો છે.-લિપિસામ્યથી આ ગ્રંથ વિક્રમની તેરમી શતાબ્દીમાં લખાયેલો હશે. શંકર ભાષ્યનાં પત્રો લાગે છે.

૪ વૈદ્યકગ્રંથ । વૈદ્યકનો આ ગ્રંથ લિપિસામ્યથી સંવત ૧૩૦૦ની આસપાસ લખાયેલો હશે. કાગળ ઉપર છે પત્ર ૨૦ છે. લગભગ ૩૧ રોગોની ચિકિત્સા અને અધિકાર બતાવ્યા છે, તેમાં ક્ષયકાસાધિકાર અને ગ્રન્થ્યવૃદ્ધિચિકિત્સા અધિકાર બતાવ્યા છે. ગ્રન્થ્યવૃદ્ધ એટલે કેન્સર રોગ ઉપરની ચિકિત્સા છે આ ગ્રંથ ઉપર કોઈ આચાર્યનું શોધન છે.

૫ પાર્થવરાકમનાટક (શ્રી પ્રહ્લાદનિર્મિત) લેખ સંવત ૧૫૦૮ વર્ષે ક્રા. શુ. ૧૫ રવિ દિને. અવેહ શ્રીગુર્જરધરિચ્યા શ્રીજાલિંગમહાસ્થાને શ્રીવાલ્મીકિયજ્ઞાતીય-દ્વિવેદી. કહુઆ-સુત દ્વિવેદી ચાગસુતેન દ્વિવેદવિશ્વનાથેન-બ્રાતૃપુત્ર-સચ્ચિષ્યપઠનાર્થ નાટકમલેખિ । (આ ગ્રંથ ગુજરાતમાં પાલનપુર નગરના સંસ્થાપક શ્રી પ્રહ્લાદનસિંહે બનાવ્યો છે-અને આ રાજા આબુના રાજા પરમારનો ભાઈ હતો)

૬ ભક્તામરસ્તોત્રં. આ ગ્રંથ ગુજરાત સૌરાષ્ટ્રનાં આનંદ ગામમાં લખાયેલો છે. ઋષિ ૧૦૮ શ્રી કલુજીતના શિષ્યે લખ્યો છે લેખ સંવત ૧૫૧૭ વર્ષે કાર્તિક શુદ્ધિ ૮ । ભક્તામર ટોળો કવિ શ્રી શિવચન્દ્રજી પત્ર ૧૧ છે ગ્રંથ સંપૂર્ણ છે આ ગ્રંથ આચાર્ય શાંતિનાથની કૃપા વડે ચંપાવતી (ચાંપાનેર)માં શ્રી શિવચન્દ્રજીએ ટોળો કર્યો છે એમ ઇતિશ્રીની પુષ્પિકામાં છે.

૭ શતપથ બ્રાહ્મણ ભાગે મધ્યમકાણ્ડ: સંપૂર્ણ પત્ર ૧ થી ૬૬ સુધી. લેખ સંવત ૧૫૪૨ વર્ષે કાર્તિક વદિ ૨ મીમે । અવેહ શ્રીપ્રકાશ મહાસ્થાને-ઉદીચ્યજ્ઞાતીય-પાઠક લોકનાથ-શિષ્યેણ માનુના આત્મપઠનાર્થ લિખિત ।

આ ગ્રંથ સિદ્ધપુરમાં લખાયેલો છે આદીચ્યજ્ઞાતિના પાઠક લોકનાથના શિષ્ય ભાનુએ પોતાના સ્વાધ્યાય માટે લખેલ છે

* અત્યારે એવો પ્રમાણિક મત છે કે વિક્રમની દશમી શતાબ્દીમાં ભારતમાં કાગળનો પ્રચાર ઘણા સારા પ્રમાણમાં થઈ ગયો હતો. અને શ્રી ભાગવત પત્રો સ. ૧૨૦૦ માં લખાયેલાં હશે તેનું અનુમાન એની લિપિ ઉપરથી થઈ શકે છે. સંશોધકોએ આ ગ્રંથ ખાસ જોવા જેવો છે.

૮ આચારદીપ: । પત્ર ૭ થી ૫૨ ઉપાધ્યાય નાગદેવવિરચિત છે. ધર્મશાસ્ત્ર ઉપર નિર્ણય આપનાર ગ્રન્થ છે. સંવત્ ૧૫૫૩ વર્ષે શ્રાવણ શુદ્ધ ૧ પ્રતિપદા સોમે । અગ્રહ રાજપુર-વાસ્તવ્ય-ઉદીચ્યજ્ઞાતિ-રાઝલ વનાસુત-રાઝ વચ્ચાકેન પુસ્તક લિખિત । આ ગ્રન્થ અપ્રકાશિત લાગે છે. રાજપુરના નિવાસી ઔદીચ્ય રાવળ બચ્ચાદે આ ગ્રન્થ લખ્યો છે.

૯ સામ્બવિરચિતાયા: શ્રીસૂર્યસ્તુતેર્ભાવ્ય । સવત્ ૧૫૬૯ વર્ષે પૌષ શુ ૭ મૌમ ।

આ ગ્રન્થ સૌરાષ્ટ્રના ઓઝા ઇન્દ્રસુત ઓઝા શ્રીધરના અધ્યયન માટે લખાયેલો છે-તેમ ત્રિપાઠી-મહાવના સુત ત્રિપાઠી રામેશ્વર રત્નેશ્વરને વાંચવા માટે છે પ્રાય: આ ગ્રન્થ અપ્રકાશિત લાગે છે.

૧૦ ક્રગ્વેદ સંહિતા, પञ्चમાષ્ટકં । પત્ર. ૨ થી ૮૫ પૂર્ણ । લેખ સવત્ ૧૬ ૬ વર્ષે વૈશાખ વદિ ૧૨ મૌમે । ભટ્ટ શિવદત્તની પેઠી. વાસુદેવસુત રક્ષેન લિખિત । આ ગ્રન્થ. જૂનાગઢમાંથી પ્રાપ્ત થયેલ છે અને ત્યાં લખાયેલો છે.

૧૧ ઉજ્જીવિતમદાલસં નાટકં । શ્રોત્રિય શ્રીનાથસુનોમદરામનામ્ન કવે: કૃતિ. । લેખક નૃસિંહ છે. લેખન કાળ સંવત ૧૫૦૦ ની આસપાસનો છે પત્ર ૧ થી ૩૬ પૂર્ણ છે. આ નાટક અપ્રકાશિત લાગે છે.

૧૨ રોમાવલીશતકં (મહાકવિ શ્રીરામચન્દ્રનિર્મિત । લેખ. સંવત્ ૧૭૦૫ વર્ષે રાજદુર્ગ-નિવાસી આમ્યન્તર નાગરજ્ઞાતીય ત્રિવાહી શ્રીસૂરજીકસ્ય નન્દનેન કૃષ્ણજિત્કેન લિખિત । સાચોરા ભટ્ટ શ્રી જયદેવ માટે લખ્યો છે.

૧૩ ક્રગ્વેદ ષષ્ઠાષ્ટકમ્ । લેખ સંવત લિપિસામ્યથી ૧૩૭૫ થાય એમ લાગે છે. તેમજ આ પુસ્તક સંવત્ ૧૫૩૩ ના વર્ષે જ્યેષ્ઠ વદિ ૨ ગુરૌ અધ્યયનાર્થે લીધું છે. નાગર રઘુનાથસુત-રામેશ્વરપદ્ધનાર્થ. પત્ર ૫૩ છે. અને જૂનાગઢમાં લખાયેલું છે

૧૪ ક્રગ્વેદ અષ્ટમાષ્ટકં । પત્ર ૧૩૦ છે. લેખ સંવત્ ૧૫૩૦ વર્ષે ચૈત્ર શુદ્ધી જીર્ણદુર્ગે । આ પુસ્તક નાગર પંડિત માટે જૂનાગઢમાં લખાયેલું છે.

૧૫ ક્રગ્વેદ દ્વિતીયાષ્ટકં પત્ર ૧ થી ૮૩ । લેખ સવત્ ૧૫૪૩ વર્ષે આષાઢ વદિ ૬ । અગ્રહ શ્રીમજ્જલપુરવાસ્તવ્ય વોરા આમ્યન્તર નાગર વોરા વાસુદેવસુતગદાધરેણ લિખિત । (આ પુસ્તક માંગરોળનિવાસી વોરા ગદાધરે માંગરોળમાં લખ્યું છે.

૧૬ ક્રગ્વેદ ચતુર્થાષ્ટકં । પત્ર ૮૯ છે । સવત્ ૧૫૪૩ વર્ષે જ્યેષ્ઠ માસ શુક્ર અગ્રહ-મજ્જલપુરવાસ્તવ્ય વોરા વાસુદેવસુતગદાધરેણ લિખિત અજાર (કચ્છ) મધ્યે ।

(આ ગ્રન્થ માંગરોળના નાગર વોરા ગદાધરે અંજાર (કચ્છ)માં લખ્યું છે.)

૧૭ કોકશાસ્ત્રં । શ્રીમજ્જિનાચાર્યનર્મદાચાર્યવિરચિતં । અપ્રકાશિતં-

સંસ્કૃત શ્લોક તથા ગુજરાતીમાં સ્વકૃત પદ્ય સાથે છે. શ્લોક તથા પદ્યની સંખ્યા ૧૮૦૦ ની લગભગ છે. લેખ સવત્ ૧૭૬૮ વર્ષે આશો માસે શુક્રપક્ષે ૫ પચ્ચમ્યાં લિખિત રાજનગરે । ચતુરસાગરેણ લિખિતં । આ કોકશાસ્ત્ર જૈન મુનિએ રચેલું છે. મદન-નગ્નિ, વાહકર-૮૪ આસનો, ૭૨ પુરુષકળાઓ, સંગીત, નૃત્ય, નાટ્ય, ચતુર્દશવિદ્યા, ભગવત્કાવ્ય, કુવલકાવ્ય, રાજ્યશીકરણાદિ અનેક પ્રકારોનો સમાવેશ કરેલ છે.-

*૧૮ સક્ષોતર્વર્ણન. (મળ્લાપાટીશ સદ્ધિન) અથકાર હરિવલ્લભ લેખ સંવત ૧૭૬૧

• આ ૧૮ અપ. ગુજ. દેવ સંસ્કૃત મહાકવિ. રાજકોટના સમુદ્ધિત છે.

શ્રા. શુ. ૨. આ ગ્રન્થ પણ પ્રાયઃ અપ્રકાશિત છે. સ્વરાધ્યાય, રાગાધ્યાય, પ્રકીર્ણાધ્યાય, પ્રગ્નવાધ્યાય, સંગીત વિષયનો અદ્ભુત ગ્રન્થ છે—આ ગ્રન્થ જામનગરથી પ્રાપ્ત થયેલ છે.

કચ્છ સૌરાષ્ટ્ર અને ગુજરાતની ચિત્રકલા

ચિત્રકલા માટે અત્યારે લગભગ ૫-૬ શૈલીનાં ચિત્રો પ્રાપ્ત થાય છે—રાજપૂતકલમ, મોગલકલમ, કાંગડાકલમ, ગુજરાતકલમ—સૌરાષ્ટ્રકલમ વગેરે .

૧ કલ્પસૂત્ર સચિત્ર પૂર્ણ લગભગ સવત ૧૫૫૦ ની આસપાસનું લખેલું અને અણહિલવાડ (પાટણ) માં તૈયાર થયેલું પુસ્તક જામનગર ઉપાશ્રયમાં છે

૨ કલ્પસૂત્ર સચિત્ર સમ્પૂર્ણ । સવત ૧૫૬૪ ના વર્ષે લખેલું અને સોનેરી ચિત્રોની સંખ્યા ૩૪ છે. ચિત્ર સુંદર અને પ્રાચીન છે. સૌરાષ્ટ્રનાં તૈયાર થયેલું છે. અમે જોયું છે.

૩ સ્વપ્નશકુનાવલિ (રૂપાવલિ) ચિત્ર સંખ્યા ૧૧૫ છે. લેખ સવત ૧૭૭૬ વર્ષે શ્રાવણ વદિ ૭ શનૌ આ ચિત્રો ગુજરાત કલમમાં છે. સમગ્ર સંગ્રહ શુ સ. કાર્યાલય રાજકોટમાં છે.

૪ દુર્ગાલક્ષ્મીપાઠ સચિત્ર આશરે સ ૧૭૬૨ માં લખેલ અને ચિત્રેલ છે. હાલારના આમરણ ગામમાં આ ગ્રંથ લખાયેલો છે. અમે જાતે જોયેલ છે ચિત્રો સુંદર છે

૫ શ્રીનૃસિંહજીનું પ્રાચીન ચિત્ર, જેની ખીજી બાજુમાં સવત ૧૫૨૬ ની સાલની ગુજરાતી ચિત્રી છે. આ ચિત્ર શુ સ. કાર્યાલયમાં છે. આવા અનેક સંગ્રહો કચ્છ-સૌરાષ્ટ્ર અને ગુજરાતમાં છે એ દિશામાં ખાસ સંશોધન કરવાની જરૂર છે.

ભારતીય અંકચિહ્નો

ડૉ. હરિપ્રસાદ ગં. શાસ્ત્રી, અમદાવાદ

ભારતની પ્રાચીન વિદ્યાઓમાં ગણિતવિદ્યા મહત્વનું સ્થાન ધરાવે છે. છેક ઋગ્વેદ સહિત જોટલા પ્રાચીન ગ્રંથમાં એક અને અષ્ટ જેવાં અંક-ચિહ્નોનો ઉલ્લેખ આવે છે^૧ યજુર્વેદ સહિતામાં એકથી માંડીને પરાધ સુધીની સંખ્યાઓની યાદી આવે છે^૨ ઔદ્ધ તથા જૈન સાહિત્યમાં આથીયે મોટી સંખ્યાઓ ગણાવી છે^૩ આ સંખ્યાઓની ગણના દશક-પદ્ધતિએ થતી એ પણ નોંધપાત્ર છે

આ સંખ્યાઓના અંક દર્શાવવા માટે ભારતની પ્રાચીન લિપિમાં કેવાં ચિહ્ન પ્રયોજાતા એ જાણવું રસપ્રદ છે, હરિપ્રીય સંસ્કૃતિના અભિલેખોમાં અંક-ચિહ્નો જેવાં ચિહ્ન નજરે પડે છે, પરંતુ એ લિપિના અક્ષરો તથા અંકો હજી બરાબર ઊકલ્યા ન હોઈ એ વિશે કલ્પનાઓ

૧. ઋ. સં. ૧૦, ૩૪, ૨; ૧૦, ૬૨, ૭

૨. યજુ. વાજ. સ. ૧૭, ૨; તૈ. સ. ૪, ૪૦, ૧૧, ૪; ૭, ૨, ૨૦, ૧

૩. 'લલિતવિસ્તર'માં ૧૦૫૩ સુધીની સંખ્યાઓ જણાવી છે; કાશ્યાપનના પાલિ વ્યાકરણમાં સૂત્ર ૫૧-૫૨ ની વૃત્તિમાં સો શતસહસ્ર (લાખ) કોટિ સુધી સંખ્યા આપી છે. અનુયોગદ્વાર ૬. માં કોટાકોટીની તથા શીર્ષપ્રહેલિકાની સમન્વૃત્તિ પણ એવા ભારે સંખ્યા દર્શાવે છે દા. ત. શીર્ષપ્રહેલિકા ૮, ૪૦૦,૦૦૦ ૨૮ બરાબર થાય છે.

કરવી અસ્થાને છે. ૪ મૌર્ય તથા અનુમૌર્ય કાલ દરમ્યાન વાયવ્ય તથા ઉત્તર હિંદમાં પ્રવર્તેલી ખરેખરી લિપિમાં અક્ષરોની જેમ અ ક્રો પણ જમણી બાજુથી ડાબી બાજુ તરફ લખાતા. એમાં એકમ ૧, ૪, ૧૦, ૨૦ અને ૧૦૦ ઇત્યાદિ હતાં એવું માલુમ પડે છે. ૫

પ્રાચીન ભારતની દેશવ્યાપી લિપિ હતી બ્રાહ્મી, જેમાંથી ભારતની લગભગ બધી અર્વાચીન લિપિઓ ઉત્પન્ન થયેલી છે. બ્રાહ્મી લિપિનાં થોડાંક અંકચિહ્ન પહેલવહેલાં મૌર્ય સમ્રાટ અશોકના શિલાલેખોમાં દેખા દે છે: બાકીનાં ઘણા અંકચિહ્ન પહેલી-ખીજી સદીના અલિલેખોમાં મળે છે. ૬-

આ અંકચિહ્નોમાં ૧, ૨ અને ૩ એ પહેલા ત્રણ અંક અનુક્રમે એક, બે અને ત્રણ આડી રેખાઓથી દર્શાવાય છે. પરંતુ ૪ થી ૯ સુધીના અંક માટે સાવ જુદી વ્યવસ્થામાં ચિહ્ન પ્રયોજવામાં છે, જે અમુક અક્ષરો કે જોડાક્ષરો જેવાં દેખાય છે. પરંતુ આ સમાન આકાર ધરાવતા અક્ષરોની પસંદગીમાં કે તે તે અક્ષર સાથે રહેલા તે તે અંકના સંબંધની બાબતમાં કંઈ ચોક્કસ ધોરણ રહેલું હોય એવું જણાતું નથી.

પ્રાચીન અંકચિહ્નોની પદ્ધતિમાં આરંભિક સદીઓ દરમ્યાન શૂન્ય માટેનું કોઈ ચિહ્ન પ્રયોજાતું નહિ, તેમજ એકમ દશક શતક આદિ સ્થાન અનુસાર અંકોનાં મૂલ્ય બદલાતાં નહિ. જેમ ૧ થી ૯ સુધીની સંખ્યા દર્શાવવા માટે જુદાં જુદાં નવ અંકચિહ્ન હતાં તેમ ૧૦, ૨૦, ૩૦, ૪૦, ૮૦, ૯૦ ની સંખ્યા દર્શાવવા માટે તે તે અંકનું અલગ અલગ ચિહ્ન પ્રયોજાતું. એવી રીતે ૧૦૦, ૧૦૦૦ વગેરે સંખ્યા માટે પણ અલગ અલગ ચિહ્ન હતાં. ૨૦૦ અને ૩૦૦ ની સંખ્યા માટે ૧૦૦ ના અંકચિહ્નમાં જમણી બાજુએ અનુક્રમે એક અને બે આડી રેખા ઉમેરવામાં આવતી. ૨૦૦૦ અને ૩૦૦૦ નાં અંકચિહ્ન પણ ૧૦૦૦ ના અંકચિહ્નમાં એવી રેખા કે રેખાઓ ઉમેરીને દર્શાવાતાં. ૪૦૦, ૫૦૦ વગેરે સંખ્યા માટે ૧૦૦ ના અંકચિહ્નની અને ૪૦૦૦, ૫૦૦૦ વગેરે સંખ્યા માટે ૧૦૦૦ ના અંકચિહ્નની જમણી બાજુએ અનુક્રમે ૪, ૫ વગેરે અંકનું ચિહ્ન ઉમેરાતું. પરિણામે શૂન્ય અને સ્થાન-મૂલ્યના અભાવે દસ કરતાં અનેકગણાં અંકચિહ્ન પ્રયોજાતા. છતાં રોમન અંકચિહ્નોની જેમ સંખ્યાના અંકોનાં સ્થાન કરતાં વધારે અંકચિહ્નો લખવાં પડતાં નહિ. ઊદાહરણ, જે સંખ્યામાં શૂન્યનો અંક આવતો હોય તેમાં અંકચિહ્નોની સંખ્યા એટલી ઓછી થતી; જેમકે, ૩૫૭ માટે ૩૦૦ + ૫૦ + ૭ એવાં ત્રણ અંકચિહ્નોની જરૂર પડતી; ૨૧૦ માટે માત્ર ૨૦૦ નું અને ૧૦ નું એ બે જ અંક-

૪. એક બે ત્રણ ચાર ઇત્યાદિ બીજી રેખાઓનાં સંયોજન એક બે ત્રણ ચાર ઇત્યાદિ સંખ્યાઓ દર્શાવતાં ચિહ્ન હોવા સંભવ છે એમ મનાયું છે.

૫. એમાં દિશાના ક્રમ જમણેથી ડાબાને હતો.

દા. ત. ૫, ૬, ૭ માટે અનુક્રમે ૪ + ૧, ૪ + ૨, ૪ + ૩; ૮ માટે ૪ + ૪; ૯ માટે ૨૦ + ૨૦ + ૨૦ + ૧૦ (જુઓ ઓડા, ભારતીય પ્રાચીન લિપિમાલા, લિપિપત્ર ૭૬.)

૬. અશોકના લેખોમાં ૪, ૬, ૫૦ અને ૨૦૦ નાં ચિહ્ન પ્રયોજવામાં છે.

સાતવાહન-કુષાણ-ફાલગુણી લેખોમાં આવતાં અંકચિહ્નો માટે જુઓ ઓડા, જા. પ્રા. લિ., લિપિપત્ર ૭૧, ૭૩, ૭૪.

પશ્ચિમ ધારની કુશાણોમાં કોતરેલાં આ પ્રાચીન અંકચિહ્ન હોલવામાં ૫, અમવાનભાવ હન્દ્રજો પહેલા કાળો રહેલો છે.

૭. જુઓ ઓડા, જા. પ્રા. લિ., લિપિપત્ર ૭૨-૭૩.

ચિહ્નોની જરૂર પડતી: ૭૦૫ માટે પણ ૭૦૦ નું અને ૫ નું એ એ જ અંકચિહ્ન પૂરતાં હતાં, ૭૧૦૦ માટે માત્ર ૭૦૦૦ નું ને ૧૦૦ નું ચિહ્ન જ જરૂરી હતું, ૨૦૦૫ માટે માત્ર ૨૦૦૦ નું અને ૫ નું જ ચિહ્ન જોઈતું. આમ અંકચિહ્નોની આ પદ્ધતિમાં અનેક અંકચિહ્ન શીખવાં પડતાં, એટલું જ, પરંતુ પછી સંખ્યા લખવામાં લાઘવ રહેતું અને સ્થાન અનુસાર સાપેક્ષ મૂલ્ય ગણવાનું ન હોવાથી એના દરેક અંકચિહ્નનું મૂલ્ય સર્વ સ્થાનોમાં સરખું જ રહેતું. ગુજરાતના અભિલેખોમાં મૌર્ય કાલથી માંડીને મૈત્રક કાલ સુધીના લેખોમાં આ પ્રકારનાં અંકચિહ્નોની પ્રાચીન પદ્ધતિ પ્રયોજાયેલી છે. ભારતના અભિલેખોમાં એ ૮ મી-૧૦ મી સદી દરમિયાન લુપ્ત થઈ.^૮

શૂન્ય અને સ્થાન-મૂલ્યના ઉપયોગ દ્વારા માત્ર નવ અંકચિહ્નોથી સર્વ સંખ્યા દર્શાવવાની પદ્ધતિ પણ સમય જતાં પ્રાચીન ભારતમાં પ્રચલિત થવા લાગી. સાહિત્યમાં શૂન્યનો પ્રયોગ ઇસ્વી પૂર્વે બીજી સદીથી દેખા દે છે.^૯ પિંગલના ઇંદ્રસૂત્રમાં શૂન્યના ઉલ્લેખ આવે છે.^{૧૦} બખ્શાલી હસ્તપ્રત (લગભગ ઇ. સ. ૨૦૦-૪૦૦)માં અંકગણિતના દાખલાઓમાં શૂન્યનો ઉપયોગ નજરે પડે છે.^{૧૧} વરાહમિહિરે પચ્ચસિકાંતિકા (ઇ. સ. ૫૦૫)માં શૂન્ય સંખ્યાનો નિર્દેશ કર્યો છે.^{૧૨} હવે ન્યોતિપના ગ્રંથોમાં શૂન્યના તથા સ્થાન-મૂલ્યવાળી અંકપદ્ધતિનાં અનેક ઉદાહરણ મળે છે. જિનભદ્રગણિ (છઠ્ઠી સદી) પણ મોટી સંખ્યાઓ આ પદ્ધતિથી દર્શાવે છે.^{૧૩} ભારકર ૧ લાની આર્યભટ્ટીય વૃત્તિ (છઠ્ઠી સદી)માં તથા લલ્લ અને બ્રહ્મગુપ્તના ગ્રંથો (૭ મી સદી)માં પણ આ નવી પદ્ધતિ પ્રચલિત છે.^{૧૪} અભિલેખોમાં નવી અક્ષૈલીનો ઉપયોગ થોડી સદીઓ પછી શરૂ થયો જણાય છે. આ શૈલીના ઉપયોગનો પહેલવહેલો દાખલો સંખેડામાંથી મળેલા ઇ. સ. ૩૪૬ (ઈ. સ. ૫૯૫)ના તામ્રપત્રમાં આવે છે, જેમાં વર્ષની સંખ્યા દર્શાવવા માટે સ્થાન-મૂલ્ય ધરાવતા અંક આપવામાં આવ્યા છે. પરંતુ આ તામ્રપત્ર બનાવટી હોવા સભવ છે.^{૧૫} સાતમી સદીના લેખોમાં પણ આ અંકપદ્ધતિ પ્રયોજાઈ હોવાની ખાતરી પડતી નથી, પરંતુ એ પદ્ધતિ આઠમી સદીના અભિલેખોમાં ચોક્કસપણે દેખા દે છે.^{૧૬} ધીણુકીના તામ્રપત્રમાં વર્ષ ૭૯૪ ના અંક દશાંશ પદ્ધતિએ આપેલા છે, પરંતુ એ તામ્રપત્ર બનાવટી હોવાનું માલૂમ પડ્યું છે.^{૧૭} રાષ્ટ્રકૂટાનાં દાનપત્રોમાં શક વર્ષ ૬૭૫ (ઈ. સ. ૭૫૪)થી

૮. ઓઝા, શા પ્રા. લિ., પૃ. ૧૦૯; દત્ત અને સિંઘ, હિસ્ટરી ઓફ હિન્દુ મેથેમેટિક્સ, પૃ. ૫૨-૫૩

૯. દત્ત અને સિંઘ, હિહિમે, પૃ. ૭૫

૧૦. જુઓ ૮, ૨૮-૩૧. ગણિત અને ઇંદ્ર શાસ્ત્રનાં અનેક પુસ્તકોમાં આ પદ્ધતિ દેખા દે છે.

૧૧. પત્ર ૨૨

૧૨. દા. ત. સ્વ-તિથિ (૧૫૦). શૂન્યનો ઉલ્લેખ એમાં અનેક જગ્યાએ આવે છે.

૧૩. દા. ત. બૃહસ્પત્યસમાસમાં ૨૨૪, ૪૦૦, ૦૦૦, ૦૦૦ માટે એ બાવીસ. ચુંવાળીસ, અને આઠ મીડાં મૂકવાનું કહે છે અને ૩, ૨૦૦, ૪૦૦, ૦૦૦, ૦૦૦ માટે બત્રીસ, બે મીડાં, ચાર અને આઠ મીડાં આપે છે.

૧૪. દત્ત અને સિંઘ, હિહિમે, પૃ. ૮૦

૧૫. આ લેખ એઈ. પુ. ૨, પૃ. ૧૯ માં છપાયો છે, પરંતુ એ બનાવટી જણાય છે. એને બનાવટી માનવાનાં કારણો માટે જુઓ મિરાશી, કોઈઈ, પુ. ૪, પૃ. ૧૬૧-૬૩

૧૬. દત્ત અને સિંઘ, હિહિમે, પૃ. ૪૦-૪૧

૧૭. ઇએ, ૧૨, ૧૫૫, બનાવટી હોવા વિશે જુઓ ઇએ, પુ. ૧૬, પૃ. ૧૯૮; પુ. ૧૯, પૃ. ૩૬૯-૭૧

દશાંશ પદ્ધતિના અંક નજરે પડે છે.^{૧૮} સામન્ત દેવદત્તના શેરગઢ અભિલેખમાં વિક્રમ સંવત ૮૪૭ (ઈ. સ. ૭૯૧)ના અંક આ પદ્ધતિમાં આપેલા છે.^{૧૯} ઇન્ડોનેશિયા અને ઇન્ડો-ચીના સંસ્કૃત અભિલેખોમાં શક વર્ષ ૬૦૫ (ઈ. સ. ૬૮૩), ૬૦૬ (ઈ. સ. ૬૮૪), ૬૦૮ (ઈ. સ. ૬૮૬) અને ૭૩૫ (ઈ. સ. ૮૧૩)ની સંખ્યા દશાંશ પદ્ધતિના અંકોમાં દર્શાવેલી છે.^{૨૦} આમ અભિલેખોમાં આ અંકપદ્ધતિ ૭ મા-૮ મા શતકથી પ્રયોજાઈ જણાય છે, ન્યારે સાહિત્યમાં એનો ઉપયોગ ૬ થી શતકથી દેખા દે છે. શત્ય વિશેના પ્રાચીનતર ઉલ્લેખો જોતાં તેમજ ગ્રીક અને આર્ય લોકોમાં નવીન અંકશૈલી વ્યાપક રીતે પ્રચલિત થતાં પાંચ છ સદી જેટલો લાંબો સમય લાગતો હોવાનું ધ્યાનમાં લેતાં, ભારતમાં આ નવી અંક-પદ્ધતિ ઇસુ પૂર્વે ૧ લી-૨ છ સદીમાં શોધાઈ હોવાનું કલિત થાય છે.^{૨૧} આ પદ્ધતિ પ્રાચીન-કાલમાં ભારતમાં જ પ્રચલિત હોઈ બીજા કોઈ દેશમાં ઉદ્ભવી હોવાનું લાગ્યેજ સંભવે છે.

ભારતીય અંકચિહ્નોની આ દશાંશ પદ્ધતિ સમય જતાં અરબસ્તાનમાં અને અરબો મારકતે યુરોપમાં પ્રસરી હોવાનું માલૂમ પડે છે. મહમ્મદ પેગંબર(હિજરત ઈ. સ. ૬૨૨)ના સમય પછી અરબોએ આફ્રિકા, યુરોપ અને એશિયાના કેટલાક મુલક સર કરવા માંડ્યા ત્યારે એમને વિકસિત અંકપદ્ધતિની જરૂર પડી. ૬૯૯ માં ખલિફ વલીદે રાજ્યના હિસાબોમાં ગ્રીક ભાષાની મનાઈ ફરમાવી, પણ એમાં ગ્રીક અંક-અક્ષરોની છૂટ રાખવી પડી, કેમકે અરબી ભાષામાં અંકચિહ્નોની જોગવાઈ નહોતી.^{૨૨} પરંતુ સમય જતાં અલેક્ઝાન્ડ્રિયા કે સીરિયાના અનુવાદકો પાસેથી બગદાદના ખલિફાએ ભારતીય અંકચિહ્ન અપનાવ્યાં, પણ એ પ્રાચીન અંકપદ્ધતિમાં શત્યની જોગવાઈ નહોતી અને એથી એ પદ્ધતિ એમની જમણેથી ડાબે લખાતી લિપિમાં પૂરી માફક આવી નહિ.^{૨૩}

ખલિફ અલ-મનસૂર(૭૫૩-૭૭૪)ના સમયમાં સિધથી બગદાદ આવેલા એલચીઝો મારકતે અરબો અભિગુપ્તના અભિસ્કૃતસિદ્ધાન્ત અને ખણ્ડખાલક જેવા ભારતીય ગણિતગ્રંથોથી માહિતગાર થયા. આ ગ્રંથોનો અરબી અનુવાદ થયો. નવમી સદીમાં અરબોને ભારતની નવી અંકપદ્ધતિનો પૂરો પરિચય થઈ ચૂક્યો, પરંતુ પ્રજામાં પેલાં પ્રાચીનપદ્ધતિનાં ધોળાર ૩૫ પ્રચલિત થતાં એ શતક જેટલો સમય લાગ્યો.^{૨૪} ૧૦ મી અને ૧૧ મી સદી દરમિયાન અને પદ્ધતિનો ઉપયોગ થતો. ધીમે ધીમે જૂના ધોળાર પદ્ધતિનું પ્રમાણ ઘટતું ગયું અને નવી અબજદ પદ્ધતિનું પ્રમાણ વધતું ગયું. અંકચિહ્નોના નવા મરોડ પૂર્વના અરબોએ અપનાવી લીધા, ન્યારે પશ્ચિમના અરબોએ એમની પાસેથી શત્યનું ચિહ્ન અપનાવ્યું; પરંતુ એકથી નવ

૧૮. 'ફતિહુર્નુ' ૬૭૫નું દાનપત્ર (મએ, ૧૧, ૧૦૮); તોરખેડે દાનપત્ર, શક ૭૩૫નું (એહ, ૩, ૫૩), કૃષ્ણ ૨ નાનું વર્ષ ૮૩૨ નું દાનપત્ર (એહ, ૧, ૫૬); ગોવિંદ ૪ થાનું શક ૮૫૨નું દાનપત્ર (એહ, ૭, ૨૬), ગોવિંદ ૪ થાનું શક ૮૫૫નું દાનપત્ર (મએ, ૧૨, ૨૪૯), અમોષ-વર્ષનું દાનપત્ર (મએ, ૧૨, ૨૬૩) કત્યાહિ

૧૯. મએ, ૧૪, ૪૫

૨૦. દત્ત અને સિંધ, દિહિગે, પૃ. ૪૪

૨૧. એજન, પૃ. ૪૯-૫૧

૨૨. એનસાયક્લોપીડિયા બ્રિટાનિકા, પૃ. ૧૭, પૃ. ૬૨૫, ટી. ૨

૨૩. દત્ત અને સિંધ, દિહિગે, પૃ. ૮૬-૯૦

૨૪. એજન, પૃ. ૬૦

મુધીના અકનાં જૂનાં ચિહ્ન ચાલુ રાખ્યાં, જે એમની મારફતે યુરોપમાં પ્રસાર્યા.^{૨૫} આથી ભારતીય અકચિહ્નોના આરમ્ભ મરોડમાં અને યુરોપીય મરોડમાં તકાવત રહેલો માલૂમ પડે છે.

યુરોપમાં ભારતીય અકાનો પ્રસાર ક્યારે અને કેવી રીતે થયો એ ચોક્કસ રીતે કહેવું મુશ્કેલ છે લગભગ ઈ સ. ૫૦૦ માં લખાયેલી બોએથિયસની ભૂમિતિમાં આ અંક દેખા દે છે, પરંતુ એ અંક મૂળગ્રંથમાં હતા એ શકારૂપક મનાય છે.^{૨૬} સભવ છે કે એ ઉલ્લેખો એ ગ્રંથની હસ્તપ્રતોમાં પાછળથી ઉમેરાયા હોય એ હસ્તપ્રતો દસમી સદી અને એ પછીની છે તે એ સહુમાં ભારતીય અક આપેલા છે દસમી સદીની આખરમાં પોપની પદ્મી પામેલા ગર્ગટ નામે ફ્રેન્ચ પાદરીએ ભારતના ધોળાર અકાનું પદ્ધતિસર નિરૂપણ કર્યું છે.^{૨૭} ગર્ગટને આ અકાની માહિતી કાની પાસેથી મળેલી એ જાણવા મળતું નથી, પરંતુ એ સ્પેનમાં ત્રણ વર્ષ રહ્યા હોઈ એમને એની માહિતી ત્યાં મળી હોવા સભવ છે ગર્ગટને મળેલા આ અકામાં શસ્ત્રની તથા સ્થાન-મૂલ્યની જોગવાઈ ન હોઈને એમને એ અનુકૂળ લાગ્યા નહોતા એમણે પોતાના ગ્રંથોમાં રોમન અકા જ વાપરેલા છે

બગદાદમાં આઠમી સદીમાં પ્રવર્તેલા ભારતીય અંક મૂર લોકાના અમલ દરમ્યાન (૮મી-૧૨ મી સદી) સ્પેનમાં પ્રસાર્યા હશે તે ત્યાં સ્થપાયેલાં વિદ્યાપીઠોમાં સમસ્ત યુરોપના વિદ્યાર્થીઓ આવતા હોઈ એમની મારફતે રોમન અકાની જગ્યાએ ધોળાર અક યુરોપભરમાં પ્રચલિત થયા હશે.^{૨૮}

અર્વાચીન અકચિહ્નોના ઉપયોગનાં ઉદાહરણ યુરોપમાં ૧૨ મી સદીમાં ઘણાં મળે છે, પરંતુ એના પ્રચારનો રીતસરનો પ્રયત્ન ૧૩ મી સદીમાં શરૂ થયો પીસા નગરના લીઓનાર્ડોએ ભૂમધ્ય સમુદ્રના તટ પર આવેલા ત્રણેય ખંડોના અનેક દેશોનો પ્રવાસ કરીને એ સમયનાં વેપાર-કેન્દ્રોમાં પ્રવર્તતી વિચિત્ર અકપદ્ધતિઓનો પરિચય સાધ્યો તે એમાં એને ભારતીય અક સર્વોત્તમ જણાયા, જેની સમજૂતી એણે પોતાના ગ્રંથમાં (૧૧૦૨-૨૮) આપી છે.^{૨૯} તેરમી સદીના અન્ય લેખકોના ગ્રંથોએ પણ ભારતીય અકાના પ્રસારને વેગ આપ્યો.^{૩૦} શસ્ત્રનો ઉપયોગ નહિ કરતા રૂઢિચુસ્ત લોકોએ આ નવી અકપદ્ધતિનો ઉગ્ર વિરોધ કર્યો, પરંતુ વિદ્વાનોના પક્ષપાતે એ પદ્ધતિને જે ત્રણ સદીમાં દૃઢમૂળ કરી દીધી પદરમી સદીમાં પશ્ચિમ યુરોપનાં સર્વ રાષ્ટ્રોએ ભારતીય અક અપનાવી લીધા તે સત્તરમી સદીમાં તે એનો ઉપયોગ સામાન્ય થઈ ગયો.^{૩૧}

સીરિયાના સેવેરસ સેઓખ્તે (ઈ સ. ૬૬૨) હિંદુઓની વિદ્યાકીય પ્રગતિમાં આ નવ

૨૫ એજન, પૃ. ૯૦, ઓઝા, ભા. પ્રા. લિ, પૃ ૧૧૮

૨૬. આ પ્રશ્નની વિગતવાર ચર્ચા માટે જુઓ એજન, પૃ. ૯૨-૯૩.

૨૭. એજન, પૃ. ૯૩

૨૮ એજન, પૃ. ૯૪

૨૯. એજન પૃ. ૯૪-૯૫

૩૦. દા. ત. અલ્ફ્રેડાડર ડી વિલા ડાઈ (૧૨૪૦) અને જોન ઓફ હેલિફેક્સ (૧૨૫૦)

૩૧. દત્ત અને સિંઘ, હેલિમે, પૃ ૯૫

અંકાની પદ્ધતિની મુક્તકંઠે પ્રશંસા કરી છે. ૩૨ એ લખે છે કે જે કેવળ ગ્રીક ભાષા બોલતા હોવાને કારણે અમે વિદ્યાની સીમાએ પહોંચ્યા છીએ એવું માને છે તેઓ ને હિંદુઓ નવ અંકો વડે ગણના કરે છે એવું જાણે તો એમને પ્રતીતિ થાય કે ખીજાઓ પણ કંઈક જાણવા વાળા છે.

યુરોપમાં આ વર્તમાન અકચિહો અરેબિક અકચિહો તરીકે ઓળખાય છે ને અરબ-દેશમાં એ હિન્દસા (હિન્દસી) તરીકે જાણીતાં છે. હિન્દસા એટલે હિંદના-ભારતીય. ૩૩ ધોઆર એટલે ધૂળ. ભારતીય અંકો કાઈ ભારતીય પંડિતે પાટલી પર ધૂળ પાથરી લખાવેલા તેથી એ ધોઆર અંક તરીકે ઓળખાયા એવી અનુશ્રુતિ છે. ભારતની પાઠશાળાની પ્રાચીન પરિપાટીમાં આ પ્રકારની લેખનપદ્ધતિ સામાન્ય હતી.

નવમી સદીથી સોળમી સદી મુધીના અનેક અરબ લેખકોએ હિંદના આ અંકાની તારીક કરી છે. ૩૪ દસમી સદીથી યુરોપીય લેખકોએ પણ ભારતીય અંકાની દૃઢી પદ્ધતિની પ્રશંસા કરી છે ૩૫ માત્ર નવ અકચિહો વડે મોટામાં મોટી સંખ્યા દર્શાવતી આ પદ્ધતિમાં ભારતીયોની ઉત્કૃષ્ટ બુદ્ધિમત્તા ગણાતી પ્રાચીન યુરોપીય લેખકોએ આ અંકોને સ્પષ્ટતઃ હિંદના અંક કહ્યા છે.

પ્રાચીન પદ્ધતિના ભારતીય અંક અરબો મારકતે યુરોપમાં પ્રસાર્યા, નૂતન પદ્ધતિના ભારતીય અંક પૂર્વ અરબસ્તાનમાં પ્રચલિત થયા અને ભારતીય અંકોનો ભારતમાં, અરબ-સ્તાનમાં અને યુરોપના દેશોમાં જુદી જુદી રીતે વિકાસ થતો ગયો ને પરિણામે આજે ભારતીય અંકો, અરબી અંકો અને યુરોપીય અંકો વચ્ચે ઘણું ઓછું સામ્ય રહેલું જણાય છે. એમ તો ભારતના જુદા જુદા પ્રદેશોની લિપિઓમાં પણ અંકોના મરોડ ઓછાવત્તા પ્રમાણમાં જુદા જુદા લાગે છે, છતાં ભારતના પ્રાદેશિક અકચિહો વચ્ચે એકંદરે કીક કીક સામ્ય નજરે પડે છે. એની સરખામણીએ અરબસ્તાનના 'હિન્દસા અંક' અને યુરોપના 'અરબી અંક' ભારતના અંકો સાથે હાલ ઘણું ઓછું સામ્ય ધરાવે છે. આ સંબંધી અરબસ્તાનમાં અને યુરોપના દેશોમાં ભારતીય અંકોના જે જૂનામાં જૂના મરોડ ઉપલબ્ધ હોય તેને ભારતના અંકોના જુદા જુદા શતકોના મરોડ સાથે તેમજ પરસ્પર સરખાવવા જરૂરી છે. આ અંગે જરૂરી સામગ્રી મળે તો એનો તુલનાત્મક અભ્યાસ આ ગ્રાંથમાં સારો પ્રકાશ પાડે.

એક ખીજો નાનો પણ વિચારણીય પ્રશ્ન છે ભારતીય અંકોની લેખનદિશાનો. સંસ્કૃતનાદિ

૩૨. પ્રાષ્ટ, રોર્થ હિસ્ટરી ઓફ સીરિયન લિટરેચર, પૃ. ૧૩૭-૩૮

૩૩. હિન્દસા, હિન્દિસા, હન્દસા, હિન્દસી, હન્દસી એવાં અનેક રૂપાંતર છે. કાંઈ જેવા કેટલાક વિદ્વાનો આ શબ્દનો આવો અર્થ યતો નથી એવું પ્રતિપાદન કરે છે અને એને બદલે એનો ઉત્પત્તિ અંદાજદ (માપ) એવા કારસી શબ્દમાંથી દર્શાવે છે. (પ્રાચ. જાણસોત્ર, ૩, ૮૮૬; ૭, ૮૧૦-૧૧). નસરુલ: 'હિન્દસી' નો અરબીમાં ઔનિતિક એવો અર્થ યામ છે તેમજ એનો 'હિંદી' એવો અર્થ પણ યામ છે. (ફત અને સિંધ, હિદિયે, પૃ. ૧૦૧-૨)

૩૪. ફા. ત. અલ-મસૂદી, અલખીરમી, અલમહસાલી વગેરે (એજન, પૃ. ૬૬-૧૦૦)

૩૫. ફા. ત. ઇસિદોરસ, ઈબ્નોનારો, અલ્ફરગાંડર ઇ વિદ્ય દેક, મેસિમસ પેન્યુલસ (એજન, પૃ. ૧૦૨-૦૪)

ભારતીય ભાષાઓમાં સખ્યા બોલતી વખતે એ આંકડાની રકમમાં એકમનો અંક પહેલો બોલાય છે ને દશકનો પછી બોલાય છે, ૩૬ જેમકે એકાદશ, એકત્રિશ (એકવીસ), ષટ્ત્રિશ (છત્રીસ), અષ્ટાશીતિ (અઠ્ઠાસી). અને ભારતીય ભાષાઓની લિપિઓમાં લખવાની દિશા ડાબી બાજુથી જમણી બાજુની છે, છતાં એકવીસ જેવી સંખ્યાઓ લખતી વખતે એક અને વીસની સખ્યા દર્શાવતા અંક અનુક્રમે ડાબી અને જમણી બાજુએ ન લખાતાં એથી ઊલટા ક્રમે લખાય છે. બોલવામાં પહેલાં એકનો અંક અને પછી વીસનો અંક બોલાતો હોવા છતાં લખવામાં પહેલાં વીસનો અંક અને પછી એકનો અંક લખાય છે, છતાં એથી વધુ આંકડાઓની સખ્યાઓના ઉચ્ચારણમાં શતક વગેરેના આંકડા પહેલા બોલાય એવો ક્રમ અપનાવાયો છે અને એ ઉચ્ચારક્રમ લેખનક્રમ સાથે સુસંગત રહે છે, પરંતુ એ આંકડાની રકમોમાં ઉચ્ચારક્રમ અને લેખનક્રમ વચ્ચે દિશાભેદ ક્રમ રહેલો છે એ એક સમસ્યા છે.

ન્યારે પદ્યરચનાઓમાં^{૩૭} સંખ્યાઓને અંકોને બદલે સંકેતશબ્દોથી વ્યક્ત કરવામાં આવે છે ત્યારે તો સ્પષ્ટતઃ અકાના વામતો ગતિ એવા નિયમે ઊલટી દિશા રાખવામાં આવે છે, જેમકે ૧૨૩૦ માટે સ્વ-લોક-કર્ણ-ચન્દ્ર ડાબેથી જમણે લખાતા અક્ષરોવાળી લિપિમાં અ કો માટે આ ઊલટી દિશા ક્રમ નક્કી થઈ હશે એ એક પ્રશ્ન છે.

એવો એક ત્રીજો પ્રશ્ન છે હસ્તલિખિત પુસ્તકોમાં પત્રાંકો કે મગલ સંકેતો માટે પ્રયોજાયેલા અક્ષરોનો. ૧ માટે એ ૨ માટે દ્વિ અને ૩ માટે ત્રિ એ તો સ્પષ્ટતઃ એક દ્વિ અને ત્રિ ના આઘ અક્ષર છે. સ્વ, સ્તિ અને શ્રી એ સ્વસ્તિશ્રીના ત્રણ અક્ષર છે, ન્યારે ઈ ન અને મઃ એ ઈં નમઃ ના ત્રણ અક્ષર છે. ૪ માટે ક્ષ તો ૪ માટેના અંકચિહ્નનો આકાર સૂચવતો જોડાક્ષર જ છે ૩૮ ૨૦ માટેનું ચિહ્ન ૨૦ જેવું હોઈ પછીના થ ને મળતો આકાર ધરાવે છે, જે આગળ જતા ઘ ના આકારનો પણ મનાયો. હસ્તપ્રતોમાં ૪, ૫, ૬, ૭, ૮, ૯, ૧૦, ૨૦, ૩૦, ૪૦, ૫૦, ૬૦, ૭૦, ૮૦, ૯૦, ૧૦૦, ૨૦૦, ૩૦૦, ૪૦૦ ઇત્યાદિ અંકો માટે આવા અનેકવિધ અક્ષર લખવામાં આવતા, જેમાંનો દરેક અક્ષર તે તે અંકના કંઈ સદીના કેવા મરોડ પરથી વ્યુત્પન્ન થયેલો હશે એ પણ શોધવાનું છે. દા. ત. કેટલીક પ્રતોમાં પુસ્તકના કે એના કોઈ ખંડના આરભમાં ૮૦ જેવું અને એના અંતમાં છ જેવું લખેલું હોય છે, તેમાં મૂળ કથો સંકેત ઉદ્દિષ્ટ હતો અને પછી એનો આવો આકાર કેવી રીતે પ્રયોજાયો એ વિશે પ્રાચીન લિપિના અક્ષરો તથા અંકોના જુદા જુદા મરોડોનો તુલનાત્મક અભ્યાસ કરી શોધવા જેવું છે. ભારતીય પ્રાચીન લિપિવિદ્યામાંના કોઈ વિદ્વાનો આ પ્રશ્નો પર કંઈ પ્રકાશ પાડશે એવી આશા રાખીએ.

૩૬ અંગ્રેજીમાં ૧૧ થી ૧૯ સુધીની સંખ્યાઓ પણ આ ક્રમે બોલાય છે.

૩૭. ખાસ કરીને ગણિત, જ્યોતિષ, છદ વગેરેના ગ્રંથોમાં, પુસ્તકોની પ્રશસ્તિઓમાં અને પદ્ય અંબિલેખોમાં; જેમકે સમુદ્રર્તસ્વરાઃ (૪, ૬, ૭): ગિરિરસવસુ-સંખ્યાન્દે શકસમયે (શક સ. ૮૬૭) પૂર્વના આલોક્ય નરેશ અગ્રમ ખીલના સમયના દાનપત્રમાં (૪, ૭, ૧૬)

૩૮. 'સૂર્યપ્રજ્ઞપ્તિ' પરની ટીકામાં મલયગિરિ (૧૨ મી સદી) ક્રમે ૪ નો સૂચક જણવે છે. (૪, ૬, ૪૭)

PŔE-ARYAN ĠUJARĀT

Syt. A. V. Pandya, Vallabb Vidyanagar

I. TRADITIONAL HISTORY OF EARLY GUJARAT

The chain of the regional history of Gujarat in its extant form goes back unbroken into antiquity to the period of Chandragupta Maurya (c. 322-298 B. C.) in the light of the Junagadh Rock inscriptions of Aśoka (Corp. Ind. I, N. E., pp. 1-29) and Rudradāman (Ep. Ind. VIII, pp. 36-49), whereas the India subcontinental history goes further back by about three centuries to the rise of the Mahājanapadas or the Great Republics in Northern India when the Assyrian Empire was collapsing in the World History. But the traditional Aryan history as recorded in the early Indian literature, which has still to be corroborated by archaeology for linking in up with the unbroken chain, carries back the antiquity of Gujarat to the earliest recorded past of India when Śaryāti, one of the sons of the legendary progenitor Vaivasvat Manu, mentioned only once in the R̥gveda I, cxiii, 17, seems to have led a colonisation into Gujarat (Viṣṇu P. IV. 1-11), some 133 generations before Chandragupta Maurya (F. E. Pargiter, Ancient Indian Historical Tradition, 1922, pp. 144-50). A contemporary regime of the Bṛ̥guṣ in South Gujarat is revealed by a reference to the marriage between Sukanyā, the daughter of Śaryāti, and Chyavana (Vayu P VXXXVI, 23 : Mahābh. XXV, 122), which is also mentionmed in the Vedic literature (R̥gveda, I, cxvi, 10 : Śatapatha Brh. IV, 1, 5; et seq.). Gujarat received its first recorded name after Ānartta, the son and successor of Śaryāti Kuśasthali was the capital of Ānartta. The dynasty of Śaryāti Mānava did not last long and it was destroyed by the Punyajana Rākshasas. The remnant of the Śaryātas appear to have afterwards become a tribe among the Haihayas (Matsya P. II, iii, 7-49 : F. E. Pargiter, op. cit. p. 102).

The traditional history, while it continues its account of the dynasties which ruled in many other parts of India, observes a silence about Gujarat till the period of the Bhārata War, when the Yadus or the Yādavas of Mathurā were led into Gujarat by Kṛ̥ṣṇa. (Mahābh. V. 47, 1881-92). In contrast to it, the Harivaṃśa, ICIV, 5138, has a different story to tell. According to this work the Yādavas, "were originally", as observes R. P. Chanda, "settled in Saurāṣṭra and then spread to Mathurā, lend support to the R̥gvedic tradition that the Yadus, together with the Turvaṣas, came from beyond the sea" (The Indo-Aryan Races I, 1916, pp. 28-9). The Yadus, according to the R̥gveda, VII, 18, 33, 83, were among the five people (Anu, Druhyu, Puru, Yadu and Turvaṣa

or the Turvasu as the Purāṇas mention them), who together with another five tribes fought with Sudāsa of the Bhārata clan. They had come with the Turvasas from beyond the sea (Rigveda, VI 20, 12) and ruled in a region lying towards the south from the habitat of the Rigvedic Aryans in North India. The tribal suffix—u occurring in these names is non-Aryan and reminds us of the distinctive Akkadian name-suffix. These people may well have entered India from Akkad (the ancient central Iraq bordered on either side by Sumer and Assyria or the land of the Assuras) by way of Saurāshtra. It was during the Akkadian period (c. 2360-2180 B. C.) that the Harappa Civilization maintained its best commercial relations with Iraq (E. Mackay, *Early Indus Civilizations*, 1948, pp. 156-9). However, the apparent Akkadian terminations of these Rigvedic Pañchajanas or the 'Five Tribes' do not necessarily imply that all of them were the Semites. Some of them may have been the Aryan clans who stayed in Western Asia as an intermediate stage between their earlier home and India. The Aryan name-suffix 'asva' of the first Yādava named Haryaśva who entered Saurāshtra as a fugitive according to the Harivamśa version, is highly suggestive. The Bhāgavata P. VI. 5, 3, connects the Nārāyana Sarovara in Kutch with the Haryaśvas and a Koli tribe of Saurāshtra traces descent from a Haryaśva (Gaz. Bomb. 1884, p. 139) is an interesting fact. Madhu, the Asura ruler of Madhupurī or Mathurā of later ages gave his daughter in marriage to Haryaśva, who inherited the former's territory. The Mount Girnar and the territory of Saurāshtra received their ancient names 'Revata' and 'Surāshtra' respectively, after the names of the two descendants of the Haryaśva Yādavas. They later shifted their capital from Kuśasthalī in Gujarat to Madhupurī (Mathurā) on the middle Yamurā. The Yādavas who were led into Gujarat by Kṛṣṇa from Mathurā in order to escape the invasion of the powerful Jarāshandha of Magadha, were not the new comers. They were the Haryaśva Yādavas who returned to their fatherland in the time of trouble under the advice of Kṛṣṇa's father Vasudeva (Harivamśa, II, 55).

The Purāṇas which carry further the traditional history after the Bhārata War down to the rise of the Guptas, leaves out Gujarat with the event of the submergence of Dvārāvātī into sea. Gujarat remained as a republican state from the period of Kṛṣṇa down to the rise of the Guptas, as we gather from the Mahābhārata, Śānti P. L. XXX I; Pāṇini's Ganapāṭha, VI, 2, 34, the Arthaśāstra, XI, 1, 160 etc. (A. V. Pandya, 'Republican Traditions of Gujarat', Sandesh - Gujarat Issue, 1-5-1960, pp. 27-38), and the Purāṇas which deal mainly with the hereditary ruling dynasties had obviously no interest in the post-Bhārata War Gujarat.

II THE 'LINGUISTIC' ASPECT OF THE CHALCOLITHIC GUJARAT AND THE ARYANS

The past of Gujarat as revealed by archaeology presents still an incomplete mosaic. However, the salient fact which this science has brought to light is that the Harappan community seems to have loomed large among the chalcolithic ethnic elements of the littoral Gujarat and that it persisted in Gujarat longer than it did in the Indo-Sarasvati basin, nay, the community, in course of time, fused together on the soil of Gujarat with other peoples whose material remains are characterized by (1) a lustrous red ceramic ware painted in black with stylized antelopes and other patterns reminiscent of the Peninsular Chalcolithic Civilization which I first brought to light by my discovery of Māhishmatī, Nāgdā, Prakāshā, etc. (A. V. Pandya, 'Archaeological Discoveries in the Narmada Valley - A New Prehistoric Civilization Uncovered', J. Gujarat Res. Soc., Apr. 1946; 'Prehistoric Cultures Discovered on the Narmada', Proc. Ind. Hist. Congr., Bombay, 1949;), (2) the Black and Red Ware found in South India in a Megalithic context; and (3) the Northern Black Polished Ware of the full Iron Age (R. E. M. Wheeler, *Early India and Pakistan*, 1959, p. 138) when, as is attested by the Asokan Edict at Junagadh, a form of an early Śaurasenī Prakrit from which the Gujarati had descended through and intermediate Apabhramśa was spoken in Gujarat. Being a Middle Indo-Aryan of the Middle Country the entry of this Prakrit through Rajasthan into Gujarat, where it superceded an earlier Indo-Aryan of the Outer Band, seems to have resulted from a pre-Mauryan expansion of the population of the Middle Country to the western sea-coast. We can't say how far we can connect this event with the coming of the Yādavas during the Bāhrata War period assigned to c. 10th century B. C. by F. E. Pargiter (op. cit. p. 301). The fact that Gujarati has a substructure of an Outer Band Indo-Aryan and has, further, no contemporary Dravidian basic elements of a regional heritage in its substratum seems to carry back the currency of the Indo-Aryan languages in Gujarat into the Harappan period is indeed an interesting point. It not only shows the possibility of the Harappan community having been an Aryan speaking folk, but indicates also that the Harappans were not Dravidians. If the Harappans were Dravidians, the language of Gujarat where they found a permanent home, would have certainly contained a Dravidian substratum. That an earlier Outer Band Indo-Aryan was current in Gujarat during a pre-Buddhist period is a fact which is also borne out by history. Elu, the ancient form of Singhalese of Ceylon, which, together with Mahārāṣṭrī, formed the Southern group of the Outer Band Indo-Aryan, was introduced, as the Ceylonese

scholars themselves maintain (S. Parnavitana, *International Conference on Asian Archaeology, Summaries of Papers, 1961*, p. 43) and Dr. S. K. Chatterji had stated earlier on the basis of the Ceylonese Buddhist chronicles and linguistics (*Origin & Development of the Bengali Language, 1926*, pp. 15, 72-3, 176) by the Aryan colonisers from Gujarat in c. 600 B. C. or earlier. An Indo Aryan which was spoken in Gujarat in the 7-6th century B. C., on the above grounds, may well have entered this region a few centuries earlier, say by c. 1000 B. C. still earlier, the Aryan Dardic speches which stand structurally midway between the Iranian and the Indian groups, penetrated Gujarat when their speakers spread from the Indus valley to the Konkan (Dr. I. J. S. Taraporewala, *Elements of the Science of language, 1951*, p. 183-4) before advent of the speakers of the Outer Band languages into this region. This may carry us back well into the Harappan period in Gujarat. The situation, however, militates against the Dravidian identification of the Harappans sponsored by Sir John Marshall (*Mohenjo-Daro & the Indus Civilization, I, 1931*, pp. 110-2) which has by now found a general currency as a self-evident fact.

We may rule out here the various attempts made so far at deciphering the Indus script of the Harappans, including the recent one by Dr. B. Hrozny (*Ancient History of Western Asia, India & Crete, 1944*, pp. 156-98), but we can hardly afford to neglect what two world renowned authorities on ideography and Assyriology, have said in this respect in the very page of Marshall's report. It is now generally acknowledged that the Brāhmī alphabets have descended mainly from the ideographic-cum-phonetic Indus script. Applying the phonetic values of the Brāhmī phonograms to some corresponding Indus signs occurring on a series of seals, which on the basis of the Sumero-Babylonian analogy, must have been of commercial significance containing personal names which necessarily involves phonography even in an ideographic writing, C. F. Gadd has demonstrated how a peculiar sign-group recurring frequently between two sign-groups, reads as the Aryan vocable 'putra', showing a relationship, "- 's son-" in the writing on these seals (*Mohenjo-Daro and the Indus Civilization* edited by Sir John Marshall, II, Chap. XXII, 'Sign-List of Early Indus Script,' by C. F. Gadd, pp. 413-4) S. Langdon, too, states, "Far more likely is it that the Aryans in India are the oldest representatives of the Indo-Germanic Race" (op. cit, chapt. XXIII, 'The Indus Script', by S. Langdon, p. 432).

The Harappan language may or may not have been an Indo-European speech, but the vague manner in which Marshall has ruled

out the postulations of his above-named collaborators (op. cit, pp. 110-2) and the unscientific way in which he has applied a generally accepted linguistic term the 'Dravidian' to the Harappans, whose language is still positively unknown, may raise a doubt whether the great antiquarian to whom we are so indebted for his important work on such historic sites as Taxila, Sanchi, etc., was doing justice to the ethnolinguistic aspect of the protohistoric Harappan data or was he indulging in some wishful or biased thinking in this particular case? He has certainly erroneously employed the term 'Dravidian' in a religious connotation, which is indeed inadmissible. Science of religion has no such a religion on its list, nor has it been possible for a theologian to isolate a Dravidian cult from what is called the Brāhmanism. The venture of Marshall makes indeed a poor show among his otherwise dependable writings contained in the great work which he himself has edited. No doubt, the Harappan religion displays some non-Aryan traits, but all of them can hardly be attributed to the phallic worship, much emphasized by Marshall in his plea, which was not exclusively a Dravidian institution. The worship of the Phallus and Mother-Goddess was widely spread among peoples out of India and figurines of these deities have also been found at such early sites as Karim Shahr and Jarmo (S. A. Pallas, *The Antiquity of Iraq*, 1956, pp. 398-400) In India the cult of the Mother-Goddess is essentially an eastern institution as we can say on the basis of the Tāntric literature. Even 'linga' is not a Dravidian term. It is Austric in origin (Pre-Aryan & Pre-Dravidian in India, Part I by J. Przyluski, 1929, pp. 10-1).

The erroneous approach to the identification of the Harappans by Marshall has unluckily led astray the course of the Indian protohistory. We can not say positively as to who were the Harappans till the Indus script is not scientifically deciphered.

The horse was associated with the Aryans during protohistoric times. The Aryans had a horse cult and the Aryan rulers so often had the name-suffix-aśva, -aśpa, etc., in India, Iran and the Western Asia and it was they who introduced the true horse and a little later the horse-drawn chariot in the ancient civilizations of the Old World by c. 1900 B. C. (R. Girsman, *Iran*, 1954, p. 71). The horse and the sun symbols are regarded as having been connected with the Aryans as we know from the cemeteries of Sialk in Iran. The earliest presence of the horse is attested in the Indian subcontinent at Lānghnaj-I and in the pre-Harappan Rana Ghundai-I sequence (close of the 4th millenium B.C.) as also in the Harappan civilization (S. Piggot, *Pre-historic India*, 1950, p. 267), and their figures are also visible among the rock-paint-

tings in an undated context. This factor raises further the possibility of an association of the Aryans in some way with the early chalcolithic peasant villagers, whose advent into Baluchistan from the fourth millennium B.C. and their subsequent movements paved ground for the rise of civilization in India. I first pointed out in 1947 the Aryan affinities of some of these Peasant Village Cultures in the context of my discovery of what some archaeologists later called the Malwa Culture (A. V. Pandya, 'Prehistoric Cultures discovered on the Narmada', Proc Indian History Congress, Bombay, 1947, pp. 179-94).

An additional point which merits consideration in regard to the Dravidian and Aryan controversy waging on the Harappan Civilization is that its people ate and cultivated the wheat and barley, like the Aryans and other ancient western peoples, in contrast to the habit of eating and farming the rice which is the staple of the indigenous non-Aryans, the Austrics, the Dravidians and the Mongoloids.

In view of the foregoing theme of mine in the present paper I would deal mainly with the pre-or extra-chalcolithic folks and cultures of Gujarat.

III. THE RISE OF FOOD-PRODUCING ECONOMY AND GUJARAT

The domestication of plants and animals for food-production usher in the era of permanent settlements in the Human history, which, under specific ecological conditions, gave rise, in course of time, to the urban life and imperialism, the hall marks of civilization. They are attested archaeologically first in Sumer (the ancient Southern Iraq, linguistically distinct from the rest of Mesopotamia, which was Semitic Akkadian in the centre, and the Semitic Assyrian in the north), although the Sumerian tradition itself ascribes the importation of the elements of the civic life sometime before 3000 B.C. to an eastern land lying across the Persian Gulf.

The food-producing economy of the ancient Old World was based mainly on two cereals, the wheat (with barley) and the rice. The ancient civilizations of Egypt, Iraq and the Indus valley in the Indian subcontinent and cultures of the Aryans were based on the production of the wheat and the barley, aided by dairying. On the other hand, the culture based on the rice aided by fishing, but lacking dairying, were not able to record such great strides in material progress on account of comparatively less food surplus they yielded to support non-food producing classes of artisans, priests, warriors, etc., on account of certain limitations imposed by the milpa ('burn and slash' or jhumming known as 'Dahdia' in Gujarat) form of cultivation on these paddy growers.

The wheat-barley farmers, on the other hand, had the plough and the farm animals at their disposal, which enabled them to produce enormous quantities of the food-surplus, more so in the great river valleys and with the aid of irrigation, to feed a development of urban life. However, the achievements of the rice-based cultures were indeed greater in the domain of religion and philosophy. It may be noted that out of the four major ethnolinguistic groups residing in India, the three, namely, the speakers of the Austric, the Dravidian and the Tibato-Burman (Mongoloid) languages eat and grow rice, whereas, the speakers of the Indo-European languages or the Aryans eat and cultivate the wheat in their major habitat in the Northern India.

The barley-wheat-based major civilizations, namely, the Sumero-Babylonian, the Elamite the Minoan and the Egyptian, began to be subdued by the Aryans from c. 2000 B. C. onwards because they possessed a new technological renovation. It was the swift horse which they later yoked to a light war chariot. These civilizations could not meet this Aryan challenge at the battle-field. The rising Semitic Assyrians or the Asuras, as they called themselves, were the worst victims. However, they found in the weapons of a new metal iron, a superior innovation with which they routed the Aryans from Western Asia. The reflections of these Aryo-Assyrian conflicts for supremacy in the ancient Middle East appears to be reflecting in the accounts of twelve Devāsura wars preserved in the early Aryan literature (Śatapatha Br. i, 6, 9 · Mahābhārata, Śānti P., XXXII, Matsya P. XXXIV, 37; et seq.) as suggested by E. B. Havell (Aryan Rule in India, p. 4). India has the richest iron ore in the ancient Old World. Gujarat which itself is rich in ferruginous rocks of a high economic significance, was obviously the chief coast of India for the Assyrians to import the Indian commodities. I have already demonstrated a relationship between the Assyrians and Gujarat (Journ., Gujarat Research Soc., VI, 4, 1944, p. 204; A. V. Pandya, 'Some Ancient Cities of Iraq in Early Indian Literature': Vallabh Vidyanagar Res. Bull. I, i, 1957). The Yādavas were exterminated in the Yādavāsthali by an iron weapon, which sprang from the belly of Sāmba (Mahābh., Mausala, 3). They may have been killed perhaps by some foreign people equipped with iron weapons, the story of Yādavāsthali may perhaps have been devised to conceal a defeat. We know how the early Indian writers have omitted the invasions of Alexander and Muhammad Gazanvi. Iron was looked upon as an unpious and unclean metal by the Aryans in India, as we know from the story of Lohāsura who attacked the Pāṇḍavas (Skanda P., I, ii, 65), and the legend of Lohagandha connected with a post-Bhārata War ruler

Janamejaya (F. E. Pargiter, op. cit. p. 114). Iron-smelting and working has been mainly associated with such non-Aryan primitive tribes as the Asuras of Bihar, the Agarias of Madhya Pradesh, the Kammars of the south, the Luvaias of Gujarat and Gaduias of Rajasthan. We shall discuss later how the three of the important occupations of Gujarat, namely, iron-smelting, cotton-growing and shipping were connected with the non-Aryans.

IV. TWO ASIAN CRADLES OF CULTIVATION

The two cereals the rice and the wheat do not grow under the same climatic conditions in a single tract. Two separate cradles have therefore been recognized in Asia for the cultivation of the two food-grains (R. Coulborn. *The Origin of the Civilized Societies*, 1959, pp. 31-66). The rice grows without irrigation, if the soil is suitable, in the humid areas, which receive a higher rainfall ranging between about 200 and 150 cm. under normal conditions. In contrast, the wheat needs a precipitation-range between 100 and 75 cm. Simple Societies may raise their respective crops profitably under these physical conditions. Between the two precipitation-ranges lies a transitional belt occupying the 150-100 cm gap, which is important from the viewpoint of the Socio-cultural dynamics, for an entry into it by the either community involves a readjustment of food-habits and a change of agricultural technology. We may call it the Rice-Wheat Transition Belt or RWT Belt in short. The first strategy of India to history is that the RWT Belt occupies its interior, dividing Gujarat also into a rice-growing area and a wheat-growing area, with the Narmada forming a rough borderline. The RWT Belt has been expanding, narrowing and fluctuating within a given limit according to the climatic changes that have taken place in India and some adjacent areas. I have worked out a succession of these changes for the details of which I would refer to one of my earlier papers entitled the 'Post-Pleistocene Hydrographic Changes in Western India' (International Conference on Asian Archaeology, Delhi, 1961).

In view of the foregoing the cradle of the wheat-barley farming has been located in the highland and the marginal hill valleys in the Middle East and that of the paddy-growing has been recognized in the South-Eastern Asia (Bengal to Viet Nam) more particularly in the areas lying along the Bay of Bengal (Carl O Saur, *Agricultural Origins and Dispersals*, 1952, p 110, E Werth, Grabstock, Hacke and Pflug, 1954, p. 434 : H von Wissman, 'Role of Nature and Man in Changing the Face of the Dry Belt of Asia', *Man's Role in Changing the Face of the Earth*, 1956, p. 283)

In Gujarat the researches in Archaeology, anthropology and linguistics have been progressing steadily for which our thanks go first to Shri P. G. Shah, the President of that unique multi-research regional institution of India, Gujarat Research Society, which has earned a high reputation both in India and abroad. It was a result of efforts made by Shri P. G. Shah that the late Rao Bahadar K. N. Dikshit, who was the Director General of Archaeology in India, 1937-44, organised two archaeology surveys in Gujarat, namely, a survey of North Gujarat with co-operation of the Department of Archaeology, the then Baroda State, Gujarat Research Society, Deccan College Post-Graduate & Research Institute, Poona, and Gujarat Sāhitya Sabhā, Ahmedabad, under Prof. Dr. H. D. Sankalia (Investigations into Prehistoric Archaeology of Gujarat, 1946) and a survey of the valleys of Narmada and the Tapti conducted by myself (A. V. Pandya, 'Archaeological Discoveries in the Narmada Valley-A New Protohistoric Civilization Discovered', J. Gujarat Research Society, April 1946, Bombay : A. V. Pandya. 'Protohistoric Cultures discovered on the Narmada' Proc. Ind. Hst. Cong. 1949, Bombay pp. 179-194 : A. V. Pandya, 'Prakāshā and its Protohistoric Remains' the Times of India, 24-12-1949). The Departments of Archaeology of the Central and the State (Gujarat) Governments and of the Universities of Baroda (M. S. University), Poona (Deccan College Post-Graduate Research Institute) and Vallabh Vidyānagar (Sardar Vallabhbhai Vidyapeeth) have made significant contribution to unravelling the past of Gujarat. In the domain of anthropology Shri P. G. Shah himself has been in the forefront rendering indeed a great service to Gujarat together with his colleagues through Gujarat Research Society. For linguistic researches, too, Gujarat Research Society has come forward and Prof. Dr. T. N. Dave's important work in this field is indeed of lasting value. There are also some other institutions and scholars who have been pursuing such studies. In the field of other protohistoriographical sciences, like the post-Pleistocene palaeo-ecology, ethnology, linguistic palaeontology, etc., too little has so far been done and we have still to pull on with the contributions of G. A. Grierson (The Linguistic Survey of India, IV, IX, 1904-16); R. C. Caldwell (Dravidian Comparative Grammar, 1913); J. Przyluski and J. Bloch (Pre-Aryan and Pre-Dravidian in India, 1929); K. Amrita Row (Indian Antiquary ILVI); S. K. Chatterji (The Indo-Aryan and Hindi, 1940). I have published some 32 articles on the physiographic changes that have taken place in Gujarat during the Holocene (A. V. Pandya 'Reconnaisances around the Rann of Kutch', Kumār (Guj.) Ahmedabad, 1940-41, extract published in Sind Historical Journal, 1947, pp. 110-18 : A. V. Pandya,

'The Late Post-Pleistocene Hydrographic Changes in Western India', International Conference on Asian Archaeology, 1961, pp. 12-15). We have a brief report by F. E. Zeuner (Stone Age and Pleistocene Chronology in Gujarat, 1950) on past climatic fluctuations in North Gujarat. We have still to depend largely on the Gazetteers of Bombay, IX, (Tribes and Castes) for a study of the non-tribal communities of Gujarat.

It has not yet been possible in Gujarat to establish a correlation between archaeologically-revealed early cultures with non-Aryan peoples on which linguistic palaeontology, fossil traits isolated by ethnological studies, the traditional history, etc., shed some light. The limitations of archaeology may particularly be borne in mind in this connection. The communities, like our present day tribals, who employ chiefly such perishable forest and animal products as wood, bamboo, gourds, skins, bones, horns, etc, seldom leave archaeologically recognizable traces of their material culture for the posterity.

In Gujarat, the regional social structure of the majority community which is patrilineal on the Aryan model, possesses a matrilineal substratum as exemplified by such facts as the son-in-law addressing the father-in-law formally as *māmā* (maternal uncle) among several middle and lower castes, indicating an early assimilation of a matrilineal social order, obviously non-Aryan in character.

The linguistics and ethnography hint at the presence of a pre-Austrian community termed as the Negritos who survive as the food-gathering Kadars in Kerala, the Andamanese and among some Naga tribes of Assam (The Vedic Age, ch viii, by S K. Chatterji, 1952, pp-142). Linguistically we cannot say anything in this connection in respect of Gujarat. The find of a single skeleton having a skull with 'Negroid affinities' together with six others whose skull capacity 'compares with that of the modern Europoid' (Iravati Karve, Preliminary Report of the Third Gujarat Prehistoric Expedition, 1945) found in a microlithic context (Lānghnaj I) at Lānghnaj in North Gujarat may perhaps be of some somatic interest.

V THE LĀNGHNAJ-I PEOPLE

Speaking archaeologically, the 'Europoid' people of the Lānghnaj I, assigned to a 'pre-2000 years ago' period (i.e., by far a few centuries B.C., which may be round about the Buddhas life-time) by F. E. Zeuner (Stone Age and Pleistocene Chronology in Gujarat, 1950, p. 44) or rather c. 4000 B.C. on the basis of the microlithic Teri industry analogy (Ancient India, 12, 1956, pp. 4-20) on one hand, and the Austrian peoples, whose antiquity may go back into the fourth millenium B. C.

in Gujarat, as we shall discuss later, seem to be the earliest known communities we encounter in Gujarat. We may begin here with the microlithic Lānghnaj-I community.

It would indeed be a pleasure to read the story of the oldest known Holocene culture of Gujarat in the very words of the archaeologist who, following in the footsteps of the pioneer R. B. Foote, laid it bare at Lānghnaj (W. Rly.), a village lying about 50 km. north of Ahmedabad :—

“Systematic work in North Gujarat (at Lānghnaj), careful observation of their occurrence in Tinnevely (the Teri sites), small excavations in West Bengal (Birbhanpur) and detailed study in Mysore have now shown that in all these areas microliths are considerably old—probably Mesolithic. And though it is difficult to generalize, their occurrence coincides with a drier climatic phase and scrub forests (As the preceding ‘W’ and the succeeding ‘Y’ phases at Lānghnaj were drier, the ‘X’ phase of Lānghnaj-I folk was relatively humid, Zeuner, op. cit., 1950, page 24. A. V. Pandya). In Gujarat alone, an idea of the life of the people who manufactured these microliths and their times can also be had. Very briefly, these people lived in Northern and Central Gujarat when the climate was slightly more wet (the term must be ‘wetter’—A. V. P.) They had occupied, perhaps temporarily, elevated areas—sand dunes—formed during the previous dry period and which enclosed on three sides small inundation lakes. They eked out their living by hunting and fishing cattle, milgai, deer, rhinoceros, mongoose and pig, small burrowing ones like squirrel (it is not a burrowing animal A. V. P.), rats, and tortoise and fish—were brought and cut up in their camps. All activities were no doubt carried out with tiny tools, points, owls, blades and graters (It is difficult to understand how the prehistoric Lānghnajwallas cut or slaughtered even the rhinoceros with microlithic ‘composite tools’. A. V. P.) The hunter-fisher’s love for the chase is also attested to by their long, slender body, particularly long thin legs (a novel way of determining the profession of a dead people on skeletal basis a study of the Hottentots, the Eskimos, etc., would disprove it.—A.V.P.) Among the few ornaments are found flat beads of dentalium shell...they had some idea of life after death; for the dead are buried in a highly flexed posture. Physically or racially they were fairly tall, with long head, slightly protruding lower lip and recall the Hamitic people of Egypt”. (Dr. H. D. Sankalia, *Indian Archaeology Today*, 1962, pp. 45-6).

The proposition that the Lānghnaj-I people were chiefly the hunters (F. E. Zeuner, op. cit., p. 6 : R. E. M. Wheeler, *Early India* and

Pakistan, 1959, p. 73-4) calls for some comments in view of the ecological factors involved and some relevant internal evidence. The most fundamental fact which first engages our attention in regard to the archaeological stratigraphy at Lānghnaj is that the excavations have revealed a site of such a prolonged human occupation (H. D. Sankalia, *Journ. Gujarat Res. Soc.*, XVII, 1956, pp. 275-84) as a predominantly food-producing economy alone could have supported, except in the case of the coastal fishing or the cave-dwelling, which are to be ruled out in the present case.

In the faunal assemblage from Lānghnaj, the majority of the animals, as tentatively identified by Dr. Iravati Karve (op. cit.) and as mentioned by F. E. Zeuner ("rhinoceros of the unicornes group, a large bovine, a sheep or goat, deer, big, horse, dog, etc.," op. cit. p. 7) and R. E. M. Wheeler ("Indian rhinoceros, hog-deer, axis deer, nilgai antelope, black buck, bovines, pig, horse", op. cit. p. 73) appears to have belonged to two diverse types of habitats, viz. a comparatively dry and a humid habitat. The prearchaeological phase termed 'W' by Zeuner seems to have been climatically a drier one (op. cit. p. 24), during which the dunes were formed just as they are forming at present in certain parts of the Indian Desert (Rajasthan) and in which the nilgai, the blackbuck etc., could have persisted in a wild state. The bovines encountered in the Lānghnaj-I horizon may, with the exception of the buffalo, have or may not have been the native animals, but the presence of the horse, if the identification is confirmed, poses an interesting question. It is at Lānghnaj that the Indian archaeology first comes across the horse during the Holocene. It belongs characteristically to the Eurasian steppes and the issue involves its entry into Gujarat from outside. It was certainly not wild in Gujarat in former times. The onager called the Ghudkhar in Gujarat (Gorkhar, Hind.), which roams in the saline flats of the Rann of Kutch, found here an habitat subsequent to the drying up of the Rann, which was anciently under the sea, an event calculated to have taken place by 1000 B.C. (A. V. Pandya, *The Post-Pleistocene Hydrographic Changes in Western India*, op. cit.). The question arises, who did bring the horse into Gujarat? Has the Lānghnaj-I people domesticated the horse, which they may have perhaps brought with them from outside together with the cow, the sheep and the goat? The buffalo is indeed native to the area. The Mehsana breed is famous in India (R. O. Whyte, *The Grassland and Fodder Resources of India*, 1959, p. 94) and the place-name 'Mehsana' with old form 'Mahishānaka' found in old inscriptions (G. V. Acharya, *Old Inscriptions of Gujarat*, III, 1942, p. 47) means the place of the buffalos. The rhinoceros can

flourish well in the tall grasses. The buffalo may perhaps have entered the region in the wake of the humid phase obviously from an eastern or a southern habitat, or might have been brought by some alien people attested by a Negroid skeleton at Lānghnaj-I. Zeuner, perhaps rightly, suspects a domestication of the animals on the part of the people of Lānghnaj-I (op. cit. p. 7), but his dating of this culture is open to question.

If the Lānghnaj-I people were mainly hunters, they would have in that case preferred to live in the nearby forested sub-Ārāvallian areas teeming with the big game, instead of settling in the loamy savannahs of North and Central Gujarat, which could have hardly supported a vegetation in which game animals in such sufficient numbers as may go on feeding such an extensively-distributed microlithic folk as archaeologists have found so far (R. B. Foote, *The Foote Collection of Indian Prehistoric and Protohistoric Antiquities*, Cal. Rais., 1914 : H. D. Sankalia, *Investigations into Prehistoric Archaeology of Gujarat*, 1946, pp. 151-305), for a good number of generations as various excavations in North Gujarat including those at Lānghnaj suggest, unless they were food-producers to an appreciable extent. The occurrence of microliths with worn out indented edges at Lānghnaj and other microlithic sites in North and Central Gujarat were of no use otherwise to the settlers at these places unless they had to cut with them at least the graniferous grasses if not the cultivated crops. The presence of pottery, even in small quantities, suggest again a comparatively sedentary agrarian life aided, as other facts suggest, by cattle-herding and game as available in a savannah and fishes from the rainwater collected in the 'blow' outs'. The preferential location of habitations on elevations (fossil dunes) overlooking fields of a rich loam so very fertile for growing millets, by the Microlithic folk of Lānghnaj area, lends further support to this mode of productive economy.

The archaeological data from Lānghnaj-I is indeed reminiscent of analogous Neolithic material and other evidence from Jarmo (c. 5100 B. C.) and from even earlier Karim Shahr in the northern Iraq (Braid-woods, *Sumer*, VII, 1951, pp. 99-106. S. A. Pallis, *The Antiquity of Iraq*, 1956, pp. 396-401), although Lānghnaj-I seems to be somewhat later in this context. " The domestication of sheep and goats and the cultivation of grain," observes the famous prehistorian G. Smolla, "were probably begun in the wooded steppe and steppe areas of north-western India and the adjoining western Asiatic mountain regions during the sixth millenium B. C. at the very latest. For several reasons it is probable that the impulse which stimulated the transition to those now

forms of production came from tuber-planting. It is possible that the cultivation of several small-seeded cereals (millets), forms the point of transition between tuber-planting and cereal-crop farming." (Bemerkungen zur Frage nach der Herausbildung neolithischer Kulturerscheinungen, 1955, p. 334). "Then, among hunters of the Indo-Iranian border ranges" writes the noted human-ecologist Hermann von Wissmann, "the breeding of sheep and goats was 'invented'. Then among tribes growing millets and herding sheep and goats, grasses with larger seeds were cultivated for the first time. Thus Iran and its surroundings fostered a forming, herding and hunting people, for which a light pedocal soil easily prepared, is convenient. Such types of soil can be found in open country of steppe and wooded steppe." (Role of Nature and Man in the Dry Belt of Asia, ' Man's Role in Changing the Face of the Earth, 1960, pp. 285-6)

The data both material and environmental from Lānghnaj-I is not yet so adequate for want of extensive vertical evidence, as to justify a generalization. However, in view of the above facts and on the basis of the correlation between Lānghnaj-I on one hand, and Rangpur-I in the peninsular Gujarat (R E M. Wheeler, op cit. p. 76), the Teri-dune sites in the extreme south (F.E Zeuner and B. Allchin, Ancient India, 12, 1956, p. 4) and at Birbhanpur in West Bengal (B B. Lal, Anc. Ind , 14, 1958, pp. 4-48), on the other hand, we may derive some tentative inferences. The few common features which this Indian Neolithic Complex heralding perhaps the incipient food-producing economy in the Peninsular India, shares with the pre-pottery Qila Gulmuhammad-I carbon—dated c. 3350 B.C. (R.E.M. Wheeler, op cit, pp. 72-3), do not imply that Lānghnaj-I is later than this Baluchi site as it has a little pottery. In an Indian environment where forest-tribes still use gourds, hollow bamboos, skins, etc, as containers and a few of them still manufacture pottery with hand, the ceramics can hardly serve as a reliable chronometrical device, as it does in the Middle Eastern archaeology.

It appears that a wave of the incipient mixed farmers-cum-hunters belonging essentially to a Neolithic complex such as represented by Jericho-Karim Shahr-Jarmo series set out from a home lying westwards as we can judge from their basically mesolithic tool-tradition, began to move eastwards "It was in these conditions of pressure in the Near Eastern region," observes R. Coulborn, "that the new crafts of mesolithic hunting and gathering and later of cultivation began and continued to develop it began in the westernly deserts in which desiccation started earlier The main events were, of course, the invention of a long succession of new practices to enable people to survive. But, with

these main events, there occurred a vastly important series of secondary events, namely the spread of mesolithic and agricultural peoples...the migration into Europe, the migration into tropical Africa and a probable migration into eastern and southern India and southern Asia" (The Origin of Civilized Societies, 1959, pp. 36-7). They appear to have preferred a loamy soil easy of working for their rudimentary cultivation. They entered India and reached Gujarat where we encounter them archaeologically as Lānghñaj-I and Rangpur-I folk. We have yet no means to ascribe a dependable date to this event. If the Teri-dwellers of the Tirunelveli area, dated to c. 4000 B. C. by Zeuner (op. cit., p. 8) and little later in the case of the main Teri industry—represented their southernmost extension, the Lānghñaj-I people may have antedated the Qila Gulmuhammad-I folk, i. e., to about the early centuries of the fourth millennium B. C. Birbhanpur may perhaps be taken as an eastern extension through the middle India where we find a large number of microlithic sites many of them being in the rock-shelters containing superimposed primitive paintings.

Some important points emerge from the foregoing discussion, which may be considered while planning for field archaeology and ethnology in Gujarat. Both the Teri and the Birbhanpur microlithic cultures look somewhat senior to the Lānghñaj-I. They must have passed through Gujarat on their way from their western homeland in the Middle East to the southern and eastern India, we may therefore hope to trace some pre-Lānghñaj-I phases of this early complex in Gujarat and we may perhaps have in that case some Jericos and Jarmos in India just as we have found in Lothal a Mohenjo-Daro, if field work is undertaken at some of the numerous microlithic sites which are known to us in Gujarat since the days of R. B. Foote (Indian Prehistoric and Protohistoric Antiquities, Cat. Rais., 1914, pp. 191-243).

We have already noticed how the second cradle of food-production based on rice has been recognized in Bengal and its vicinity, where, the Bay of Bengal, had its head nearer the Rajmahāls some 5000 years ago, as D. N. Wadia has pointed out ('The Making of India', Proc. Ind. Science Cong., 1941, Baroda). Birbhanpur in that case may not have been far away from the sea when the microlithic people flourished there. The trans-peninsular penetration of a Western incipient food-producing community and its settling in the very heart of the Eastern food-producing cradle at a time when perhaps the inhabitants of the latter were also passing on to the rice-growing is an interesting point. That the food-producing economy originated in a single area located in the Middle East and spread there from all over the Old World is an old

theory which persisted long and was subsequently rationalized by G. V. Childe (*Man Makes Himself*, 1936, et. seq.). Researches of N. I. Vavilov in physiology of cultivated plants and their dispersal led to multi-cradle theory and Sauer lately advocated two cradles, as we have noticed, and went so far as to suggest that the grains and cattle in the Middle East were domesticated only as a result of knowledge coming from South-East Asia and not independently. R. Coulborn who has recently made an effort to rehabilitate the Middle East to its former position (*The Origin of Civilized Societies*, Princeton, 1959), may perhaps derive some support from the Birbhanpur situation. But, the issue is not without complications. The Birbhanpur folk must have passed through the RWT Belt on its way from the west to Bengal. There is no doubt that these people were incipient cultivators as a prolonged habitation at a single site, the occurrence of serrated microliths, etc., indicate. If they were the wheat-barley cultivators like the chalcolithic Western farmers including the Aryans, they would have yielded to the rice while traversing the RWT Belt, or, in the case they were millet-growers, they may have then passed through this Belt with no change in food-habits and food-growing. But, in both the cases the Western incipient farmers were herders of the dairy animals. Therefore, they must have passed dairying also on to the peoples whom they may have initiated to cultivation. The fact that the rice-eaters like the Austries, the Mongoloids, etc., have no taste for milk, with the exception of the Dravidians, does not help Coulborn's cause as also of Sauer in regard to domestication of animals.

The Austries therefore may have already taken to food-producing prior to the Western incipient food-producers entered the Eastern food-producing cradle in Bengal living at Birbhanpur sometime during the fourth millenium B.C. (B.B. Lal, *Ancient India*, 14, 1958, p. 36) as also at numerous early microlithic sites in Bengal and adjacent areas calling for excavations.

We come across rather a different position in the southern India, where the people who are Dravidian-speakers eat and cultivate the rice as do the Austries and the Mongoloids and side by side practice dairying like the West food-producers, indicating an early contact of the Dravidians with the Austries and the Western food-producers alike. The most primitive cultivators of the southern India are the Urahs, the Malave-tans, the Thantapulayams, etc., who still use wooden farming tools and have Austric survivals in their institutions (J. H. Hutton, *Caste in India*, 1951, p. 9). It may show that the Austric incipient food-producers of a pre-lithic stage had penetrated the southern India issuing

obviously from the eastern India at a remote past initiating probably the southerners, who have been Dravidian-speakers since very old times as we shall see later, to the cultivation of the rice, but, evidently not to dairying which the Austriacs did not practice. We are not in a position to say anything about the contribution of the Teri-people to the early South Indian economy, since we know too little about them. The first lithic tools apparently related to the food-producing economy, we encounter in the southern India, are the pre-Brahmagiri-I Polished Stone axes dateable to the last quarter of the third millennium B.C. according to Utnoor carbon-date which also occur at the Ash mound sites attesting a cattle-herding economy. The Polished Axe industry belongs genetically to its eastern counterpart which can be traced further (I do not contribute to the view that the South Indian stone ages are of a western derivation) to South East Asia. This fact, taken into consideration with that related to the originally Austriac primitive cultivators of the southern India, may show that waves of the paddy-growing Austriacs may have penetrated this part of the subcontinent. The Stone Axe complex was subsequently infiltrated into by a Western food-producing community of a chalcolithic stage, the very one in my opinion, which I have named the Peninsular Chalcolithic Civilization (A. V. Pandya, op. cit., 1946). It is very likely that some Western food-producers like this or some earlier ones whose relics are unknown if they were not the Teri-folk may have introduced the cattle-herding mainly for dairying among the early South Indians.

VI. THE ADVENT OF THE AUSTRICS IN GUJARAT.

THE ORIGIN OF THE BHĪL AND KOLĪ TRIBES

Having thus dealt with the early Western food-producing communities reaching the eastern and the southern India, obviously, by the way of Gujarat, we turn now to the other side of the picture, i.e., the westward movements of the early food-producing communities from a home in Bengal or nearby.

The Eastern incipient food-producers who cultivated the rice are indeed identifiable with the so-called Austriacs on linguistic (S. K. Chatterji, *The Vedic Age*, 1952, pp. 149-50) and ethnographic (Surjita Sinha, 'Tribal Cultures of Peninsular India as a Dimension of Little Tradition in the Study of Indian Civilization, *Man in India*, XXXVII, 2, 1957, pp. 93-118) grounds whose pre-Vedic antiquity in the northern India is attested by the presence of certain vocables in the Rigvedic Old Indo-Aryan language (T. Burrow, *The Sanskrit Language*, 1955, pp. 375-80), may they were present there even from before the rise of the Harappan Civilization, as we shall see later.

According to the theories advanced recently by Carl O. Sauer, E. Werth, and H von Wissman, referred earlier, the hunter-fishers and mussel collectors living along the coast of the Bay of Bengal chanced to invent first the cultivation of tubers, fruits and later the wet rice and also developed water transport. Among the food-gatherers the males have to be mostly out-doors and the female remains virtually the master of the affairs at home. This state gives rise under certain conditions to matriarchate in a community and in the religion of such people the goddesses dominate the pantheon. When such a religion develops monotheism, we find high Goddess ruling supreme, instead of God. Our Śāktism exemplifies such a development, which has also given rise to Yoga and some mystic practices which were later associated with Tāntrism. These incipient hunter-fishers who achieved a food-producing stage by paddy-growing aided by fishing, were Austric-speakers, as we have noticed. They tamed buffalo and domesticated the fowls as prestige animals and for sacrificing them to their various goddesses. The sacrifice of the buffalo to Durgā and her various forms is a survival of such a practice. In a later stage they domesticated the elephant. The old terms for them *karpāśa*, and *mātanga* respectively, are of Austric origin (Pre-Aryan & Pre-Dravidian in India, 1929, pp. 3-32). They never practiced dairying and therefore the people of the Far East, Eastern India and the Austric-speaking Indian hill tribes, including the Bhils, do not like milk. They counted by twenties in terms of *kodīs*. They chewed the betel leaf and became accustomed to carry load by weighing it on either side of a bamboo pole (Kāwad) which they balanced on the shoulder. Their women painted the teeth black. These practices still survive in eastern India and south-eastern India. They raised menhirs on their dead heroes, a tradition still maintained in India by the Khāsīs, the Bhils and other tribes. They worshipped the Moon goddess and the Sun God besides a number of goddesses. The crocodile was their river-god. It is significant that the Brāhmanical goddesses the Gangā, Yamunā and the Narmadā ride on the crocodile. One can interpret a process of synthesis lying in the background of the Indian iconography in which the vehicles of gods and attendants may in a good number of cases have been pre-Aryan totems and dieties.

The most important Austric heritage seems to be the Assembly of Five Leaders for village and clan administration, which still persists in various parts of the Far East. The Aryans seem to have adopted it as Pañchakṣitī (Rigveda IV. 2,5) from the Austrics. Thus the Panchāyat system of the village administration appears to be an Austric contribution to India.

The occurrence of the figures of such animals native to humid habitat as the elephant, the buffalo, the rhinoceros, etc., on the Harappan seals and of such Austric dieties as the Mother-goddess, the phallic god, etc., in the Harappan pantheon and the Yoga cult, may perhaps be explained by assuming a closer contact between the rice-growing Austrics from the east and the wheat-growing Harappans from the west. This may indicate a pre-Harappan presence of the Austrics in a part of the northern India, going back perhaps to the fourth millennium B. C., if the figurines of the Mother-goddess and the phallic god occurring in the pre-Harappan Zhab culture of Baluchistan may be attributed to an Austric contact, about which we are not sure. It may have perhaps taken a millennium more for the Austrics to spread from Bengal-Orissan coast to the northern India and we may thus guess that they began to move as the rice-growing fishers from the sea-coast some time in the fifth millennium B. C., or earlier still before the Birbhanpur folk reached Bengal. There occur several Austric speeches as forming small patches in a Tibeto-Burman milieu on the Sikkim-Nepal border, the western Nepal, in the Simla Hills where the Austric Kanāwri is spoken and on the extreme north-west of India where the Austric elements are discernible in the Burushask spoken in a part of Kashmir. No wonder, if the Dahāe of the ancient Iranians (Dasyus of the Rigveda), residing in a part of the Inner Asia, were an Austric people. Being paddy-cultivators, these Austrics may well have avoided a part of the Indo-Sarasvati basin, where sufficient rainfall favouring the rice-growing may not have been available, although the climatic conditions may have been slightly better than at present.

It would be worthwhile for us to review past hydrographic conditions in and around Gujarat before we proceed further with the Austric movements, for we come across them in Gujarat in two forms; firstly, as the Koli mariners and the cultivators in the plains and secondly, as the forest-tribes the Bhils and others.

VII. THE FORMER HYDROGRAPHY OF GUJARAT

The saline marshes called the Ranns of Kutch were, as has been mentioned earlier, under the sea during protohistoric times, because the Gulf of Cambay had its head about 325 km. further inland at the mouth of the present *Luni nadi* separating in this case Saurashtra from the Indian mainland. The Rigveda mentions a river named Sarasvati which flowed from the mountains to the sea (VI 61, 2, 8, etc) running, as its dry bed suggests, parallel to the Indus in Sind. The two great rivers met the sea in this landlocked arm of the Arabian Sea. They served also as the waterways for traffic from the northern part of the

Indian sub-continent (Sind, the Punjab, the north-western Rajasthan), which has been the main political theatre of the Indian history and which is connected with Iran and the Inner Asia by land-routes, to the Gujarat littoral, from where the Western World is nearest to India by way of the sea. Okhāmandal was a separate island, the *gheds* in Saurashtra and a part of *Bhāl* were under-water. Rangpur and Lothal were on the coast. It may be mentioned here that I pointed it out first that Lothal had direct water-way through the former sea over the Rann and the channels of the twin rivers the Indus and the 'lost' Sarasvatī, for traffic with Sind and Punjab (A. V. Pandya, 'Lothal and its Harappa Culture', Vallabh Vidyanagar Res. Bull., I, 2, 1958, pp. 25-40, pl. VIII, A) and archaeologists have not so far taken into consideration these geographical features of ancient Gujarat in connection with their interpretation of the protohistoric data from Rangpur, Lothal and other sites.

VIII. DWARKA AND BROACH AS AUSTRIC PORTS

Those Austric fisher-boatmen from whom the Kolis (the term means 'man' in the Munda) of the West Coast seems to have descended, settled on the Gujarat coast, where they were branched off in course of time as the Khārvās, the Vāghers and the Māchhīs, who are now held to be the best seamen of India.

In the hills there had been mainly the Bhils and on the coast the Kolī tribes and castes. In the plains too, we find the Kolīs divided into the Bāriyās, Pātanvādīās, Talabdās, etc., as the farm labourers (now farmers under a recent legislation) in Gujarat. The cultivation of the cotton is ascribed to the Austrics and Gujarat had been the best producers of this fibre plant since early times. It was unknown in the Middle East and Europe and was exported from Gujarat. There was a port named 'Kārpāsīkā' (mod. Kāvī) noted for the export of cotton. The Kolī can be traced as cultivators as far north as the southern Sind and south-western Rajasthan.

The Gujarat sea-faring castes the Khārvās, the Vāghers, etc., who, as we have noticed, have descended mainly from the Austrics, still frequent with their country crafts the ports on the Makrān Coast, the Persian Gulf and the Red Sea. That a shrine of the Hindu mother-goddess Hinglāj, which has an Akkadian name Ninā, situated on the Makrān coast, is enumerated as leading one among the fifty-two Śakti-pīthas of Śāktism. An early folk with some Austric traits called the Halla has been noticed on the Persian Gulf (S. A. Pallis, *The Antiquity of Iraq*, 1956, p. 487). M. S. Poech has traced them further west among the peoples of the southern Arabia, North and East Africa (Man's

Role in Changing the Face of the Earth, p. 284). We cannot say if they were the people who introduced the various cults of the female dieties including the mother-goddesses among the early Semites and other patrilineal peoples, whose pantheons consisted originally of male gods together with a single Earth goddess (the Sumerian, the Aryans, etc.).

The etymological study of a few place-names of Gujarat appear to suggest a high antiquity going as far back as the closing centuries of the fourth millennium B. C. for the Austric settlements on the Gujarat coast. The etymology of the names of the two oldest ports of Gujarat, viz., Bharukachchha (Broach) and Barvai (Prakrit, 'Bārāvati', Sanskritized as 'Dvāravati'—Dwārka (has been traced by J. Przyluski to the Austric root *baru*, which stands for the 'sea', on the same basis he traces the origin of the Indian god 'Varuṇa' the Purāṇic diety presiding over the 'sea', the 'water' the cardinal point the 'west' and the 'sky'. (Varuna, God of Sea and the Sky, J. R. S., July, 1931, etc.). The Sumerian term for the 'sea' was 'bar', which also later entered the Semitic languages (Arabic, 'bahr'). The Sumerians who are first attested in southern Iraq or the ancient Sumer during the Warka B period (c. 3500 B. C.), if not earlier, were also a sea-faring people from very early times of their history.

IX. THE SUMERIAN PARADISE 'DILMUN' AND GUJARAT

These protohistoriographic developments raise some queer and complex problems that demand a study of the Sumerian traditions and literature on our part. One of such problems is that the Sumerians are now generally held on mainly archaeological grounds, to have pioneered the urban civilization in the human history between c. 3500 and 3000 B. C. However, the Sumerians themselves had a different story to tell which I have already discussed in an earlier paper ('Gujarāt'-Divāṅī issue, 1961). They said that the elements of the urban civilization were brought to Sumer by the god *Enki* (Babylonian *Ea*), whom I have recognised as the Sumero Babylonian counterpart of the Indian Varuna on the basis of his epithets, characteristics, functions, etc. (A. V. Pandya 'Some Ancient Cities of Iraq in Early Indian Literature', V. V. R. Bulletin, I, 1, 1957, p. 43). He was an alien diety in Sumer, having originally been connected with a land across the sea called *Dilmun* (Akk., *Nituk*), and who was admitted into the Sumerian triad (Anu, Enlil and Enki or Ea). "When we first encounter Babylonian civilization", states L. Spencer, "we find it grouped round about two nuclei, Eridu in the south and Nippur in the north. A more civilized deity held sway at Eridu, which was the home of Ea. From the water and the sea, he brought knowledge of all manner of crafts and trades, arts and industries

and art of impressing written characters on clay" (Myths & Legends of Babylonia & Assyria, pp. 14-15). The Sumerians placed their Paradise in Dilmun. Enki, according to the Sumerian 'Epic of Paradise and the Fall of Man', which in its Nippur version is about a millenium older than the R̥gveda, was originally a ruler of Dilmun, the land which, according to the inscriptions of Sargon of Agade (c. 2303-2247 B. C.) was, on one hand, contiguous with Bit-Jakin, the coastland of Sumer, towards the east by the way of Anshan (the Iranian coast near Iraq) and was situated, on the other hand, across the Eastern sea or the Persian Gulf (S. Langdon, Sumerian Epic of Paradise, Philadelphia Uni., p. 10). Dilmun has not been precisely indentified and located. Delitzsch had hesitatingly identified it with the Bahrein island, the centre of the pearl-fisheries in the Persian Gulf. Recently, the eminent American Sumerologist had identified it with Saurashtra, after his study of the Harappa culture in India (S. N. Kramer, The Times of India, 12th January, 1961).

Dilmun was not a land of fable. It finds references in the ancient literature and inscriptions as a land from which commodities came to Babylonia by ships. Sargon of Agade in whose time the Harappa culture maintained its best relation with the ancient Iraq as the discoveries of the Indus seals in the Akkadian layers (c. 2303-2108 B. C.) at Asmar, Ur, Kish, etc., show, claims to have exacted tribute from the maritime lands of *Melukhkhā*, Magan and Dilmun in one of his inscriptions (G. A. Barton, The Royal Inscriptions of Sumer & Akkad, 1929, p. 109). According to one of the Omen tablets of a late period from Nineveh, "Sargon traversed the Eastern Sea and carried his arms towards the east to Elam and Dilmun" (L. W. King, Chronicles, II, p. 92). Gudea (c. 2130 B. C.) states in an inscription, "By the power of Nina and Nin-Girsu, the countries of Magan, Melukhkhā, Gubī and Dilmun, rich in treas of every species, have sent him at Shīrpurla, ships laden with all sorts of trees" (Inscription on status D, Col. 4, from Lagash). Warad Sin (c. 1835-1823) refers to have repaired and enlarged a temple in Dilmun (G. A. Barton, op. cit., p. 381). Nebuchadnezzar-I (c. 1146-1122) mentions various types of articles he acquired for *Akitu* festivals (Wadi Brissah Insc. B, VII, pp. 12-31). The last of all is Sennacherib (c. 703-681) of Assyria who states, 'After I had destroyed Babylon, smashed its gods and massacred its population, I tore up its soil..(cast it) in the Euphrates and allowed it to be carried out to the sea (by the river). The masses of its soil reached Dilmun and the people of Dilmun saw them and were struck with terror and dread of Assur (the god of the Assyrians), and brought me their tribute" (O. Schroeder, KI,

II, 1922, No. 122). This brings us to the dawn of the Historic Period of India's past, when the pre-Buddhist Mahā Janapadas were in a flourishing state in the northern and eastern India and the Śiśunāga dynasty was to emerge in Magadh about 47 years after (c. 642 B. C.) the destruction of Babylon (Bab. Bābīlu). The traders and mariners of Gujarat carried commodities to Babylon (Ind. Bāveru) by ships, as we gather the Bāveru Jātaka (339). They carried also peacocks and other birds, which were indeed much in demand in Babylonia as the Babylonian records themselves confess. The peacocks were required for emellishing the royal gardens and public parks (S. A. Pallis, Antiquits of Iraq, 1956, p. 662).

The weight of the above evidence led Kramer, perhaps rightly, to the identification of 'Dilmun' with the peninsular Gujarat, i. e., Saurashtra (Kāthiāwār), as, on one hand, it lies contiguous with Iraq through the coastlands of Iran, Makrān and Sind, and, on the other, may also be regarded at the same time, as lying across the Persian Gulf from Iraq; the two main conditions which the ancient Iraqi records demand to be fulfilled by a claimant territory. The recent efforts of the Danish archaeologist T. G. Bibby to revive Delitzsch's highly speculative identification of Dilmun with the little Bahrein island ('Bronze Age Cultures of the Persian Gulf', International Conf. on Asian Arch.—Summary of Papers, New Delhi, 1961, pp. 28-30) where a small colony of pearl-fishers and others have had to risk their lives for a small quantity of potable water by diving into the depths of the sea in order to tap the submarine fresh-water sources each time whenever they wanted it. The Sumerians had no taste for pearls and it is difficult to imagine, why and how were the Sumerians attracted by the arid Bahrein to the extent of looking upon it as their Utopia and the cradle of their great civilization, which provided a prototype to the Biblical conception of the Garden of Eden? Bibby's efforts are indeed illogical and unscientific.

X. THE KUNBĪ CULTIVATORS

India's proper and leading cultivators are represented by the Kurmīs of Orissa, Bihar, U. P. and M. P.; the Kunbīs of Gujarat and Mahārāshtra and the Kuḷumbīs of Mysore. The early Buddhist and Jain literature mentions them as the Kuṭumbikas and the Kuḍumbiyas, who are identified also with the *gihapati*s of the Pālī records. The Kurmī-Kunbī complex seems to have originated from an agrarian Austric stock as the case of a particular section of the Kumaris in Bihar indicate. Later, some other cultivators including those who where the Aryans appear to have entered their fold. Their presence in Mahārāshtra is att

sted by the Gāthāsaptasatī of Hāla (c. 1-2nd century). Direct evidence in Gujarat becomes available from the Maitraka (c. 500-770 A. D.) charters, but they seem to have been present here much earlier. They are not found in the southern India, except in Mysore, but are mentioned in the early Ceylonese Buddhist literature. In one of the oldest Brāhmī cavern inscriptions of the extreme south (c. 3rd cent. B. C.) a Kutumpikan and a Vanikan (Baniā) from Ceylon are mentioned (K.A.N. Sastri, A Comprehensive History of India, 1957, p. 501). These castes may have settled in Ceylon earlier having gone there either from Gujarat or Bengal-Orissa, particularly from the former. The Aryan pāṭidār kanbis are late comers.

We have already noticed some matriarchal survivals in the Gujarātī Society, which denote an assimilation of Austric tribes.

XI. GUJARAT AND THE DRAVIDIANS

The Dravidian is an isolated family of languages found restricted mainly to the southern India and the northern Ceylon with a few primitive outliers in the northern India, among which the Malto-speaking Malers of the Rajmahāls in Bengal, the Gonds of the Sātpurās in M. P. and the Brahais of the far off Baluchistan are prominent. The cradle of the Dravidians and the phenomenon of their presence in the southern India where they developed a higher stage of culture, are still moot questions. P. W. Schmidt showed remarkable connections between the Dravidian and the languages of Australia (Die Sprachfamilien und Sprachenkreise der Erde, 1936, p. 121). Dr. L. Hamburger has recently pointed out certain basic linguistic features apparently common to the Dravidian and the Bantu languages of Africa ('Indians in Africa', man, 56, Feb. 1956). The Dravidians, like the eastern Austric communities, have been principally a rice-eating and paddy-growing people. The old Indo-Aryan term for rice, *vrihi* (Yajurveda, XVIII, 12), which through the Iranian variant *veṛneja*, dates back to the Indo-Iranian stage is traced sometimes from the Dravidian *arichi*. However, *chāval* or *chāmal*, the popular term for the rice current in various New Indo-Aryan languages, is derived from the Austric source, *chāma-la*, food (S. K. Chatterji, The Vedic Age, 1952, pp 149-50). The food habits, of course, may change, but the fact that the Dravidian society was and is still in a way matrilinear, goes against localising the Dravidian cradle in a western land. The linguistic evidence which is advanced in this behalf can also be equally interpreted as a result of the Dravidian contact from the east. The chronological remoteness between the South Indian megaliths and these of the west precludes the possibility of a megalithic Dravidian migration to India.

The presence of the cerebral consonants (ṭ, ḍ, ṇ, ḷ, śh) characteristic of the Dravidian and the some Dravidian terms occurring in the Rigveda (T. Burrow, *The Sanskrit Language*, 1955, p. 386) shows the presence of the Dravidians in the north India prior to the Rigvedic age (c. 1500 B.C.). J. Bloch, builds up his case of Dravidian movements from the Indus basin to the South by the way of Gujarat, on the basis that the distinctively Dravidian cerebral ḷ occurs only along this line of route (Pre-Aryan & Pre-Dravidian, p. 37). The suspected occurrence of some Dravidian terms, together with those of the Austric, in the Bhili; the inclusion of the Gujarat Brāhmanas in the Pañcha Draviḍa group; the first reference of the typically Dravidian religious service the *pūjā* made in the Cītā by Kṛṣṇa, to whom the contemporary Gujarātī society may well have provided an intimate background for evolving his philosophy, such geographical names as *Kānam*, etc., suggest indeed some early Dravidian contact with Gujarat, which has left perhaps little traces in the regional language compared to those of the Austric. It appears further that South Gujarat lying left of the Tapti had come under more Dravidian influence as the dress and the ornaments, some customs, etc., peculiar to its cultivators, classes, etc., suggest. But, it is difficult to say whether this resulted from a late Dravidian contact during the regime of the Sātavāhanas, the Chālukyas and the Rāshtrakūṭas or from earlier ones. It is difficult to make much out of the data at present with us.

XII. THE PULINDAS

The term Bhil has been current since the middle of the first millenium A. D., occurring first in the literature in the place-name Bhīlamāla as we gather from the Brahmasphuṭasiddhānta, (early 7th century A. D.). This etymologically Dravidian word (Villavar, bowman Bhil) may have come into currency when the Dravidian tribes may have entered the hills of the western Sātpurās and later merged into the Austric Pulindas with the result that the latter also began to be included in the term. This may have happened under the Sātavāhanas.

The Pulinda, the Kirāta, the Nāga, the Śavara, etc., were distinct hill-tribes of ancient India, often confused with each other by ancient writers. The Pūrāṇas mention the Pulindas (Vishṇu, III, 21; Matsya, 114,46-8 : Vāyu, 45,126 : Mahābhārata, XIII, 207, 42) and the charter of the Maitraka king Dhruvasena II of Valabhī dated 639 A. D. (Ep. Ind. VIII, p. 188), and of the Rāshtrakūṭa Govind III, dated 806 A. D. (Ind. Ant. XI, p. 31) mention respectively a village named Pulindānaka near Ujjain and the Pulindā river near Nasik, marking perhaps that those people were stretched over India from the northern Mahārāshṭra

(Bāglāṇ and Khāndesh) to the south-eastern Malwa, which fairly coincides with the present habitat of the Bhīl tribes. The fact is conformed by Ptolemy (2nd cent. A. D.), who located the Poulindai in the hills of the interior of Larīke (Lāda or Lāta, perhaps the former was earlier and correct form, as we can infer from the name of a Vaiśya, sub-caste called the Lāda Vāniā in Gujarat) in the area stretching between Nasik to Ujjain (Bomb. Gaz. 1, 1, 1896, pp. 537-40). The Pulindas are mentioned in the Aśokan edicts, the Arthaśāstra, I, 46, and they find the earliest literary reference in the Aitareya Brāhmaṇa, VII, 18, of c. 1000 B. C. together with the Āndhras, the Śavaras, etc. (The evidence may also show that the Pulindas were probably present in Gujarat hills and the Āravallis during the Vedic period (e. 1500-1200 B. C.) and the reference to the Arbuda (Ābu) hill in the Rīgveda, VIII, 3,19, as the abode of Śambara and other Dāsas, who came in conflict with the Aryan Indra and Divodāsa of the Battle of the Ten kings, is indeed interesting.

This brings us from the hoary past when the two chief incipient food-producing societies of the Old World made their advent into Gujarat, down to the period of the Rīgvedic Aryans and the story of our survey of a pre-Aryan Gujarat ends here.

Archaeology Section

REPORT

The Session for the archaeological section commenced its deliberations under the 'presidentship' of Dr. H. D. Sankalia. Out of the ten papers scheduled to be read six were read, the speakers for the remaining being absent.

Shri J. P. Amin spoke on નગરા (અંશાદની પૂર્વાવૃત્તિ), wherein he detailed the literary references and the descriptions of the ancient mound of Nagara. The president stated that it is more desirable to resort to archaeological means rather than purely literary for the unravelling of the ancient history.

Shri B. P. Dani read a paper on 'Icons of Sūrya and Sūryānī from Vāvadī.' The president remarked that the images are very late.

Shri M. A. Dhaky read a paper titled 'The Date of the Dancing Hall at Modhera', wherein he advanced arguments which made a case that the hall was added lately and presumably in the time of Karnaḍeva. The president agreed with the contentions and recommended the methods of analysing for other monuments

Dr. M. R. Majumdar read a paper on the newly aquired Viṣṇu image from Dhāṅk, now preserved in Gandhī Smṛiti, Bhavnagar. The image according to Dr. Majumdar followed the traditions of western school and belonged to post-Gupta period. The president invited the opinion of the scholars and along with everyone agreed to this date.

Shri J. M. Nanavati read a paper on 'An interesting Stone Image from Jhinjhuvada' The speaker contented that it could be representing the Shakti of Dīkpāla Nirṛiti. The peculiar iconography of the image attracted the attention of the house. The fish attribute in one of the hands of the goddess, got Dr. Majumdar to suggest its connection with the sea. Prof. R. C. Parikh asked for wideness of the sea at Jhinjhuvada. Shri A. V. Pandya referred to the legacy of Dharmnath in support of his possibility. Shri Ambalal Patel read a paper on "Potter's Technique through the ages of Gujarat", wherein he summerised the various techniques adopted by the potters from the Harappan Period to the present day.

J. M. Nanavati

વિભાગીય અધ્યક્ષીય ભાષણ પુરાતત્ત્વસંશોધન, અભ્યાસ અને આલેખન

અથવા

ગુજરાતની પ્રાગૈતિહાસિક અને ઐતિહાસિક સંસ્કૃતિઓનું આભાસચિત્રો
દ્વારા આલેખન (Display)

ડૉ. હસમુખ ધીરજલાલ સાંકળિયા

હિંદમાં પુરાતત્ત્વસંશોધન છેલ્લાં સો વર્ષથી થઈ રહ્યું છે, જે કે લગભગ પચાસ વર્ષથી જ આ સંશોધન નિયમિત રીતે અને પદ્ધતિસર થવા લાગ્યું. આ પ્રયાસોને વધારે પદ્ધતિમય અને નિશ્ચિત હેતુમય કરવાના પ્રયત્નો ૧૯૪૫થી શરૂ થયા.

આ પ્રયત્નોથી હિંદનો કડીબંધ અથવા સિલસિલાબંધ ઇતિહાસ હવે ઉપલબ્ધ થવા લાગ્યો છે: જે કે આમાં હજુએ કેટલીએ ઊણપો છે.

આ ઇતિહાસના લલે આપણે જુદા જુદા વિભાગો કરીએ; ઇ. ત. પ્રાગિતિહાસ, ઇતિહાસ, કે કાલાનુક્રમે

ઈ. સ. પૂર્વે	૨૫,૦૦૦	—	ઈ. સ. પૂર્વે	૨૦,૦૦૦
ઈ. સ. પૂર્વે	૨૦,૦૦૦	—	ઈ. સ. પૂર્વે	૫,૦૦૦
ઈ. સ. પૂર્વે	૫,૦૦૦	—	ઈ. સ. પૂર્વે	૧,૮૦૦
ઈ. સ. પૂર્વે	૧,૮૦૦	—	ઈ. સ. પૂર્વે	૬૦૦
ઈ. સ. પૂર્વે	૬૦૦	—	ઈ. સ. પૂર્વે	૩૨૦
ઈ. સ. પૂર્વે	૩૨૦	—	ઈ. સ. પૂર્વે	૧૦૦

ઇત્યાદિ, છતાં ખરી રીતે તો એ એક સળંગ માનવ-ઇતિહાસ છે.

માનવે કઈ રીતે-કયે કયે પગલે પોતાનો પાર્થિવ અને આધ્યાત્મિક વિકાસ સાધ્યો એની આ એક કથા છે. આ કથાને હજુ આપણી શાળાઓ અને કોલેજોમાં અભ્યાસક્રમોમાં નહિ જોવું સ્થાન મળ્યું છે. અને સમાજને-શહેરના કે ગામડાના-સમજાવવાને માટે જોઈએ તેવા પ્રયાસ થયા નથી.

હિંદના કેટલાય પ્રદેશો કરતાં ગુજરાતના માનવનો ઇતિહાસ આપણે વધારે સારી રીતે-કડીબંધ જાણીએ છીએ. આ આપણે ચિત્રો, આભાસચિત્રો (Diorama) દ્વારા દાખવી શકીએ.

ગુજરાતનો એ લાખ વર્ષનો ઇતિહાસ દસથી બાર ચિત્રો રૂપે અહીં બતાવ્યો છે. ચિત્રો રેખાચિત્ર જેવાં જ છે. ચિત્રો દોરવામાં અને એના પર પૂરતો વિચાર કરવાને અમને વખત ન હતો. એક તો મારું અહીં આ સલામાં આવવાનું અનિશ્ચિત હતું, કારણ કે આ સમયે મારા પહેલાંના કાર્યક્રમ પ્રમાણે હું ઇરિનમાં હોત. પણ ન્યારે ઇરિન જવાનું મુલતવી રહ્યું ત્યારે રોમથી આવ્યા પછી આ કામ ઉપાડ્યું. લખવામાં અને ચિત્રો દોરવામાં પંદર-વીસ દિવસમાં જે દર્ષ વખત મળ્યો તેમાં આ કાર્ય કર્યું છે. ચિત્રો અમારા ઉચ્ચ કોલેજના પુરાતત્ત્વ વિભાગના કલાકાર શ્રી. શંભુનાથ કુલકર્ણીએ દોર્યાં છે. એ દોરવામાં ડૉ. ઝમ્બુદિન આસારીએ બહુ મદદ કરી છે. અહીં હું આ બંને લાઇઓનો આભાર માનું છું.

હમણાં તો આ એક પ્રાથમિક પ્રયાસ જ કહી શકાય. જે અહીં ઉપરિચિત થયેલા વિદ્વાનોને આ પ્રયાસ સ્તુત્ય લાગે, અનુકરણ કરવાને પાત્ર લાગે, તો ગુજરાતમાં કેટલાંએ વિદ્વાનો અને ચિત્રકારો છે, જેમની મદદથી આ ચિત્રોને આપણે કલા અને ઇતિહાસની દૃષ્ટિએ એક ઉત્તમ, યથાર્થ ચિત્રો કે અભ્યાસ- (Diorama) બનાવી શકીએ, જે લોકશિક્ષણને માટે ઉપયોગી નીવડે.

દરેક શાસ્ત્રીય વિષય, પછી એ પુરાતત્ત્વ હોય કે ભાષાશાસ્ત્ર, નૌકાશાસ્ત્ર કે ઉદ્યનશાસ્ત્ર, રસાયન કે ભૌતિક વિજ્ઞાન, આ દરેકની વ્યવહારુ કે વિનિયુક્ત (Practical applied side) બાજુ હોય છે. આપણાં મ્યુઝિયમો એ ભંડારો કે અન્નયન-ઘરો નહિ, પણ સાધારણ જનતાને શાસ્ત્રીય વિષયો સમજાવવાની, એમાં રસ લેતા કરવાની પ્રયોગશાળાઓ છે. તેથી જ સંશોધનની સાથેસાથ એ વિષયને લગતાં મ્યુઝિયમો નિર્માણ થવાં જોઈએ, આજે પુરાતત્ત્વ મ્યુઝિયમ વિશે જે બોલ કહેવાને હું પ્રેરણો છું.

આ ચિત્રો સમગ્ર શકાય એ માટે આવશ્યક પાર્શ્વભૂમિનો નિર્દેશ કર્યો છે. ચિત્રોમાં પણ તે તે સમયની મુખ્ય વસ્તુ-માનવીએ બનાવેલી ચીજો પર-લક્ષ્ય બેઠ્યું છે.

સૌથી પ્રારંભાવસ્થાનો માનવ સાળરમતી, મહી, ઓરસંગ, કરજણ ઇત્યાદિને તીરે ભટકતો, કંદમૂલાદિ ખાતો અને જંગલી ગાય, બળદ, હાથી ઇત્યાદિનો શિકાર કરતો. કંદમૂલાદિ જમીનમાંથી કાઢવાનાં કે પ્રાણીઓનો શિકાર કરી કાપવાનાં મુખ્ય સાધન પથ્થરનાં હથિયારો હતાં. પથ્થરો વડે જ આ હથિયારો બનતાં. આ સમયે ગુજરાતમાં વરસાદ વધારે પડતો અને નદીઓ હમણાં કરતાં, લગભગ ૩૦ ફૂટ ઊંચાં અને બહુ જ પહોળાં પાત્રોમાં વહેતી. અત્યારે નદી-તીરે જે ઊંચી ઊંચી ભેખડો અને ઊંડાં કાંતરો દેખાય છે તે આ કાળમાં હતાં નહિ, (કારણ કે આ માટી અને રેતીથી બંધાયેલી ભેખડો બહુ પગીથી બની છે).

સૌરાષ્ટ્રનો ટાપુ કે દ્વીપકલ્પ આ સમયે નહિ હોય, જે કે ચિત્રમાં એ દર્શાવવામાં આવ્યો છે.

આવું વાતાવરણ—આળોહવા અને માનવ-જીવન—બહુ લાંબો વખત ચાલ્યું.

હજારો વર્ષો પીતતાં વાતાવરણ બદલાવા માડ્યું. વર્ષા ઓછી થવા લાગી તેથી નદીનાં પાત્રો ઊપજો અને રેતીથી ભરાવા લાગ્યાં. ધૂળતા વટોણિયાની આ સમયે શરૂઆત થઈ અને નદીનો જે આરીક કાંપ ખંભાતના અખાતમાં લાખો વર્ષથી ફલવાયો હતો તેમાંથી ઝીણી રેતી પવને ઊંચડી ઊંચડી ગુજરાતની એ વખતની ભૂમિ પર પાથરવા માંડી. આમ ત્યાં ત્યાં રેતીના ટીંબાઓ ઊભા થયા. આમ નદી અને પવને ગુજરાતની સપાટી પહેલાં કરતાં ૩૦-૪૦ ફૂટ ઊંચી વધારી, એટલું જ નહિ, પણ ઉત્તર અને મધ્ય ગુજરાતનો એ લાક્ષણિક ભૂપ્રદેશ રચવામાં મુખ્ય ભાગ ભજવ્યો.

આ સમય બાદ વર્ષા પાછી વધી. આને લીધે માટીથી અને રેતીથી બનેલા થરો કપાવા લાગ્યા અને નદીનાં પાત્રો નીચે ઊતરી ગયાં. સપાટી પર ત્યાં ત્યાં ટીંબાઓ ભેગા મળતા ત્યાં બખોલમાં પાણી ભરાવા લાગ્યાં. આમ આખો પ્રદેશ ટીંબાઓ અને નાનાં નળાવોના રૂપમાં ફેરવાતો ગયો. બાવળ, ખેર, કેસડાં ઇત્યાદિ (Deciduous) વનસ્પતિએ ઉત્તર અને મધ્ય ગુજરાતને ઢાંકવા માંડ્યું. આવા જંગલોમાં ગાય-બળદ, બેંસ, ઘેંટાં બકરાં, નાલગાય, હરણ, ગેંડા (Rhinoceros) જેવાં પ્રાણીઓ વિચરતાં, સારસ પક્ષીઓ સમયે આવાં નળાવો

પર વિસામો લેતાં, જ્યારે ઉદર, ખિસકાલી, મોળિયો ઇત્યાદિ જમીનમાં દર કરી રહેનારાં પ્રાણીઓને આવી નરમ જમીન એક ઉત્તમ રહેઠાણ બની ગઈ હતી.

આવા વાતાવરણમાં બીજો એક માનવ ગુજરાતમાં આવી વસ્યો હતો તળાવો કે નદીઓને કિનારે આવેલા ટીંબાઓ એનાં મુખ્ય નિવાસસ્થાન હતાં દર દરથી કઠણ, ઘટ, રંગબેરંગી અકીક ઇત્યાદિ પથ્થરો લાવી આ ટીંબાઓ પર એમાંથી નાનાં નાનાં હથિયારો, જેવાં કે બાણ, લાલો, ચપ્પુ, દાતરડાં વગેરેનાં પાનાં બનાવતો. આ પાનાં લાકડાં અને હાડકાંના હાથાઓમાં ભરાવવામાં આવતાં. આમ જનાવરોનો શિકાર કરવાને, શિકાર કરી મરી ગયેલાં પ્રાણીઓનું માંસ કાપવાને, હાડકાંમાંથી મેદ કાઢવાને, અને લાંબા લાંબા કુદરતી રીતે જ ઊગેલાં અનાજનાં કણસલાં લણવાને આ હથિયારો વપરાતાં.

આ માનવ ગુજરાતમાં ક્યાંથી આવ્યો એ આપણે નક્કી જાણતા નથી. પણ એ કેવો હતો એ આપણે કહી શકીએ છીએ, કારણ કે મહેસાણાથી બારેક માઈલ દક્ષિણે અને અમદાવાદથી ત્રીસેક માઈલ ઉત્તરે લાંઘણજ ગામમાં આ માનવનાં આઠથી દસ હાડપિંજરો ખોદકામમાં મળી આવ્યાં છે. ગુજરાત કે લાંઘણજનો આ માનવ ઠીક ઠીક ઊંચો, પાતળો, લાંબા માથાવાળો (દીર્ઘ કપાળવાળો) હતો. ભવાં સહેજ ઊપસેલા અને આગળ પડતાં, નાક લાંબું અને પહોળું, અને હોઠ કિંચિત્ આગળ પડતો હતો. આખો દિવસ પગ પર રહેવાથી (શિકારની પછાડી) એના પગ પાતળા અને લાંબા હતા. એમ પણ માનવાને કારણ છે કે આ માનવ માનવભક્ષી હોય. ગમે તેમ હો, પણ એટલું નિશ્ચિત છે કે આ માનવને પરલોકનો કંઈક ખ્યાલ હતો. સ્ત્રી કે પુરુષનાં શબ ટૂંટિયું વાળી ટીંબાઓ પર ન્યાં ન્યાં એ રહેતો ખાતો-પીતો અને હથિયારો બનાવતો ત્યાં જ દાટવામાં આવતાં આ દફનવિધિમાં પણ માથું ધણુંખરું ઉત્તર તરફ અને પગ દક્ષિણ તરફ અને મોઢું પૂર્વાભિમુખ રાખવામાં આવતું. કાંઈ કાંઈ વાર ફૂતરાને પણ માનવ સાથે દાટવામાં આવતો.

ગુજરાતનો આ માનવ ખેતીવાડી જાણતો નહિ, પણ ધીરે ધીરે માટીનાં વાસણો બનાવવા લાગ્યો હતો. આમ સંસ્કૃતિનાં પહેલાં પગલાં મંડાયાં.

લાંઘણજનો માનવ ક્યાંથી આવ્યો અને એનું શું થયું એની આપણને હમણાં ખબર નથી. સંભવિત છે કે ગુજરાત-રાજસ્થાનની આદિ જાતિઓમાં એના વશને હજુ હયાત હોય.

ઉત્તર અને મધ્ય ગુજરાતના હવામાનમાં વળી પાછો ફેરફાર થયો વરસાદ ઘટવા માંડ્યો અને રણના જેવી અવસ્થા હોય એમ થવા લાગ્યું આવા વાતાવરણને લીધે કે શું, પણ માનવ સંસ્કૃતિનાં આગળ પગલાં ભરતાં અટકી ગયો. કદાચ અહીંથી સમૂળગો ચાલી પણ ગયો હોય.

ઈ. સ. પૂર્વે ૨૫૦૦ની આસપાસ, એટલે લગભગ સાડાચાર હજાર વર્ષ પહેલાં સૌરાષ્ટ્રમાં આપણે માનવને ઠરીઠામ વસેલો જોઈએ છીએ સૌરાષ્ટ્ર આ સમયે એક સ્વતંત્ર ઘેટ જેવો જ હતો. હાલમાં જે બહુ જ સપાટ, નીચો લાલ પ્રદેશ ગુજરાત સાથે ઉત્તર-પૂર્વમાં એને છે તે પણ એ વખતે નહિ હોય સમુદ્રકાંઠે, નદીકાંઠે, ન્યાં ન્યાં બધી રીતે અનુકૂળતા હતી ત્યાં માનવ નગરો રચવા લાગ્યો ઈ સ ની શરૂઆતથી તે આજ સુધી, જેમ ગુજરાત સૌરાષ્ટ્રના ઇતિહાસમાં બનતું આવ્યું છે તેમ, આ કાળમાં માનવે સિંધમાંથી કચ્છ માર્ગે સૌરાષ્ટ્રમાં પ્રવેશ કર્યો હતો અને જેવી નગરરચના એણે સિંધમાં મોઢેજે-દડો, ચન્ડુ-દડો ઇત્યાદિ સ્થળોએ કરી હતી તેવાં નગરો એણે અહીં નિર્માણ કરવા માંડ્યાં.

આ સમયે નાનાં નાનાં વહાણો કિનારે કિનારે થઈને સૌરાષ્ટ્રથી કચ્છ, સિંધ અને મહારાણ થઈ ઓમાનના અખાતમાં દાખલ થતાં. ત્યાંથી ધરિનના અખાતમાં બહેરીન ટાપુ થઈને ઈરાક અથવા મેસોપોટિમિયા-ગ્રાચીન સુમેર દેશમાં-હિંદનો માલ પહોંચાડતાં. બે હજાર વર્ષ પૂરે જોમ પશ્ચિમ કિનારાનું અને ગુજરાતનું સૌથી મહત્વનું બંદર ભરૂચ હતું તેમ ૪૫૦૦ વર્ષ પૂરે પણ હોવું જોઈએ. ખીજાં નાનાં બંદરો સૌરાષ્ટ્રમાં ભાવનગર, વેરાવળ અને દારકા આગળ હોવાં જોઈએ.

નગરોની રચના સોગડાબાજીના પટ જેવી હતી. નગરના મધ્યમાંથી ઉત્તર-દક્ષિણ અને પૂર્વ-પશ્ચિમ એમ બે ધોરી રસ્તા જતા. આ રસ્તાઓને કાટખૂણે નાની નાની ગલીઓ હતી. રસ્તાની બંને બાજુએ દુકાનો અને રહેવાનાં મકાનો બાંધેલાં હતાં. મકાનમાં દાખલ થતાં એક બાજુએ ફૂવો, રનાનધર કે બાથ અને સંડાસ, અને પછાડી સુવાબેસવાના ઓરડા હતા. રસોડું વચમાં એકમાં રહેતું. ફૂવા, બાથ ઇત્યાદિમાંથી વધારેનું પાણી લઈ જવાને માટે રસ્તાની બંને બાજુએ ઈંટથી ચણેલી અને ઉપરથી પણ બંધ ગટરો રાખવામાં આવેલી હતી.

આવાં નગરો અને બંદરો ખેતીવાડી વગર સંભવિત નથી. માનવના નિર્વાહ માટે ઘઉં, ચોખા, વટાણા ઇત્યાદિ ધાન્યો ઉગાડવામાં આવતા. ખીજું, દુકાણ જેવા સમયમાં કામ લાગે એટલા માટે ધાન્યના મોટા કોઠારો પણ બાંધવામાં આવ્યા હતા.

દૂર દૂર દેશો સાથે વેપાર ચાલતો, પણ આ વ્યવહારમાં વસ્તુઓની જ આપ-લે મુખ્યત્વે થતી. પૈસા કે નાણું આમાં વપરાતું નહિ, કારણ કે આ સમયે નાણાંની શોધ જ થઈ ન હતી. વેપારીઓ પોતપોતાના માલની નિશાની માટે જુદી જુદી મુદ્રાઓ વાપરતા.

આ મુદ્રાઓ પર એ સમયે જાણીતાં પશુઓ અને દેવોની મૂર્તિઓની આકૃતિઓ બહુ સુંદર રીતે કાતરવામાં આવતી. સાથે ત્રણ-ચાર અક્ષરોમાં (ચિત્ર લિપિમાં) લખાણ પણ કારાતું. આ લખાણ શું છે એ હજી વંચાયું નથી.

ઘરમાં ખીવાને, જમવાને અને રાંધવાને માટીનાં પકવેલાં જુદી જુદી જાતનાં અને ઘાટનાં વાસણો વપરાતાં. આમાં કેટલાંક તો બહુ સુંદર રીતે કાળા રંગથી ચીતરવામાં આવતાં. થાળીઓ સાદી ન હતી, પણ એઓની નીચે સુંદર રીતે ઘડેલો એક પાયો રહેતો. આવી થાળીઓમાં ફળો વગેરે રાખવામાં આવતાં હશે.

સ્ત્રીઓ અને પુરુષો જાત જાતના દાગીનાઓ પહેરતાં. બંગડીઓ, વીંટીઓ, કુંડલો, હારો ઇત્યાદિ સોનાનાં, અડીકનાં, અને કાચ જેવી 'ફેઅન્સ' (Faince) નામની વસ્તુમાંથી બનાવવામાં આવતાં. હાથીદાંતનો પણ સારી પેઠે ઉપયોગ થતો.

આ માનવો રૂનાં (અને લીનનાં) કપડા પહેરતાં. આ કપડાં કેવળ સાલ જેવાં શરીર-પર વીંટાળવાનાં નહિ પણ સીવેલાં હતા.

નગરની આવી સુંદર, આરોગ્યપ્રદ રચના, ઉત્તમ ખેતીવાડી, ધીકતો વેપાર, પાકાં માટીનાં વાસણો અને સોનાના દાગીના ધરાવતો માનવ કેવળ પથ્થરનાં અને તાંબાનાં હથિયારો વાપરતો. આ પણ બહુ જ સાદાં કહેવાય, કારણ કે તાંબાની કુદાડીના પાનાને હમણાં જોમ હાથે ભરાવવાને ગોળ કાઢું (socket) હોય છે તેમ ન હતું. આવા સપાટ, પહોળા કુદાડીના પાનાને ઘાંસ અથવા ત્રાટકાના એક દાયામાં ભરાવવામાં આવતું અને પછી ફોરી વગેરેથી બાંધી લેવામાં આવતું.

લડાયક હથિયારોમાં ભાલાનાં પાનાંઓ અને ગાણોની ટોચો પણ આવાં જ સાદાં હતાં. આ ઉપરાંત માટીની અને પથ્થરની નાની-મોટી ગોળીઓ (અશનિ) લડાઈના ઉપયોગમાં લેવાતી. આ સંસ્કૃતિમાં તરવારની હજુ શોધ થઈ ન હતી. માઝાં પકડવાને તાંબાની ગચો વપરાતી. જમીન નાંચવાને હજો કેવાં હતાં એ આપણે જાણતા નથી. આંધકામને માટે આપણે હમણાં વાપરીએ છીએ તેવાં ‘કમ્પાસ’ અને ફૂટપટ્ટી જેવાં માપવાનાં સાધનો હતાં.

ગુજરાત-સૌરાષ્ટ્રની આ સંસ્કૃતિ ઘણી રીતે સિંધુ સંસ્કૃતિનો એક વિસ્તાર જ હતી. અને સંસ્કૃતિના ઇતિહાસમાં બહુ આગળ વધેલી સંસ્કૃતિ કહેવાય એમા હતાં નગરરચનાનું ઉત્તમ જ્ઞાન, ખેતીવાડી, કુંભારની તેમજ મુદ્રા કારવાની સુદર કળા, બહોળો વેપાર અને સાક્ષરતા. એક ન હતું લોહાનું જ્ઞાન.—લોહું ખાણમાંથી કેમ કાઢવું, એને કેમ ગાળવું અને એને ઉપ-યોગમાં લેવું એ—અને બીજું, નાણાંનો વપરાશ. લિપિની શોધ થઈ હતી, પણ હજુ એ પ્રારં-ભિક-શરૂઆતની—અવસ્થામાં ચિત્રોરૂપે જ હતી.

આ સિંધુસંસ્કૃતિએ આખા સૌરાષ્ટ્રને વ્યાપ્ત કર્યો હતો અને પશ્ચિમ કિનારા પર મુરત મુઘી એ પ્રસરી હતી. અહીં એ લગભગ ઈ. સ. પૂર્વે ૨૫૦૦ થી ઈ. સ. ૧૭૦૦—૧૮૦૦ મુઘી રહી; એટલે પાંચસો વર્ષ મુઘી ગુજરાત-સૌરાષ્ટ્ર આ સંસ્કૃતિના આધિપત્ય નીચે હતાં એમ આપણે કહી શકીએ.

પછી તો સિંધમાં જ આ સંસ્કૃતિ નષ્ટ થવા લાગી. એના પડઘા સૌરાષ્ટ્રમાં પડ્યા. આમાં કુદરતે પણ સાથ દીધો લાગે છે, કારણ કે કેટલીએ વાર લોથલ અને રંગપુરમાં નદીના પૂરથી બચવાને માટે માટીની ભીતો બાંધવી પડી હતી.

આ સંસ્કૃતિના નાશનાં અન્ય કારણો પણ હતાં. એક બીજી સંસ્કૃતિના લોકો હિંદમાં પ્રવેશ્યા હતા. ઘણી રીતે આ નવી સંસ્કૃતિ પછાત હતી પાકી ઈંટની બાંધણીનું કામ, નગરરચના, સાક્ષરતા (લખવા-વાંચવાનું જ્ઞાન), આ બધું એમા ન હતું. સૌથી વધારે ધ્યાન એએ એવું હતું, એમાં માટીના રંગ-બેરંગી પાતળા વાસણો અને એમાં દાઝના પ્યાલા જેવી નાજુક, પાતળા પાયાવાળી પ્યાલીઓ!!

પરંતુ ત્યારે સહજ પ્રશ્ન થાય કે આવી પછાત સંસ્કૃતિએ સિંધુસંસ્કૃતિનો કેવી રીતે નાશ કર્યો લડાઈનાં નવા સાધનોથી આ અનુમાનને માટે હજુ જોઈએ તેવો પુરાવો મળ્યો નથી, છતાં સંભવિત છે કે નવી સંસ્કૃતિવાળા ઘોડેસવારો હતા અને આ ઝડપી પ્રાણીની મદદથી અને એવાં જ તરવારાદિ શસ્ત્રોથી જૂની, વિશાળ અને સમૃદ્ધ સંસ્કૃતિનો નાશ કર્યો હોય!

વિપુલ સામગ્રીના અભાવે આ સંસ્કૃતિનું જોઈએ તેવું ચિત્ર આલેખી શકાય એમ નથી, પરંતુ મને ખાતરી છે કે સોમનાથ, રોઝડી (રાજકોટ પાસે) અને રંગપુર પાસે જે મોટા પાયા પર ખોદકામ થાય તો હિંદ અને ગુજરાતના આ એક અતિ મહત્વના કાળ પર આપણે વધારે પ્રકાશ નાખી શકીશું.

ઈ. સ. પૂર્વે ચોથા-પાંચમા સૈકામાં ભારતમાં લોહું વપરાતું થયું. આ જ કાળમાં ચિહ્નાંકિત તાંબા-રૂપાના (Punch marked) નાના-મોટા સિક્કાઓ પ્રચલિત થયા. એ ત્રણ સૈકા આદ્ય ગ્રીક લોકોએ હિંદ પર ચડાઈ કરી આની એક અસર એ થઈ કે સુંદર ગોળાકાર, એક બાજુ રાજાની આકૃતિ અને બીજી બાજુ એનાં ગિરુદ, તારીખ વગેરે મુદ્રિત થયેલાં હોય તેવા સોનાના અને તાંબાના સિક્કા ભારતમાં દાખલ થયા. આનું તરત જ અનુકરણ થવા

માંડયું. ત્યાર પછી મધ્ય એશિયાની યુ-એચી ઇત્યાદિ ટાળીઓ અને શેકા ભારતમાં આવ્યાં. શેકાના રાજ્યકર્તાઓ ક્ષત્રપો તરીકે જાણીતા છે. એમણે ગુજરાત-સૌરાષ્ટ્રમાં લગભગ ત્રણસો વર્ષ રાજ્ય કર્યું (ઈ. સ. ૫૦-ઈ. સ. ૩૫૦). આ કાળમાં ગુજરાતમાં બહુ સારી રાજ્ય-વ્યવસ્થા હોવી જોઈ એ એમ એ વખતના સિક્કાઓ, શિલાલેખો ઉપરથી અને બૌદ્ધ સ્તૂપો, વિહારો અને શહેરોનાં ખંડિયેરો ઉપરથી આપણે જાણી શકીએ છીએ.

સમકાલીન પરદેશી લેખકોનાં વૃત્તાંતો આ અનુમાનને અનુમોદન આપે છે. એ આપણને જણાવે છે કે ગુજરાતની આ જાહોજલાલી રોમ અને ભૂમધ્ય સમુદ્રના દેશો સાથે બહોળાં વેપાર અંગે હતી. અહીં આલેખેલાં ચિત્રોમાં આ જ વિષયોને પ્રાધાન્ય આપ્યું છે. પ્રથમ તો આપણે નિહાળીશું એ વખતનું પાટનગર, ગિરિનગર. ગિરનારની તળેટીમાં હાલ ન્યાં જૂનાગઢ આવેલું છે ત્યાં એ મૌર્ય સમ્રાટ ચન્દ્રગુપ્તના વખતથી કે એની પહેલાંના વખતથી વસ્યું હતું. (સમય જતાં આ નગરનું નામ પર્વતને આપવામાં આવ્યું, અને તેરમા સૈકાથી ગિરિનગર જૂનાગઢ કહેવાવા લાગ્યું.)

ગિરિનગરમાં એ વખતે હમણાં કરતાં વધારે અવર-જવર, વધારે પ્રવૃત્તિ, વધારે જોમ અને જીવનમાં આનંદ અને ખુમારી હતાં. બૌદ્ધ અને જૈન રાજ્યકર્તાઓના પ્રાસાદો ઉપરાંત બૌદ્ધ અને જૈન સાધુઓએ કુંગરમાં ગુફાઓ કારી હતી. અને આ અધૂરું હોય તેમ પાકી ઇંટના વિહારો, સંધારામો અને ચૈત્યો બાંધ્યાં હતાં. આમ ગિરિનગર રાજધાની જ નહિ, એક યાત્રાનું ધામ પણ બન્યું હતું. સ્થાયી પ્રજા અને યાત્રિકોને પૂરતું પાણી આપવાને માટે મૌર્યકાળથી ગિરનારની ખીણમાં એક બંધ બાંધ્યો હતો. આમાંથી નહેરો દ્વારા શહેરને પાણી અપાતું.

આ ઉપરાંત પૂર્વમાં તળાવના કુંગરોમાં ગુફાઓ કારાઈ હતી, ન્યારે છેક ગુજરાતની પૂર્વ હદ પર ઉદેપુર-વાંસવાડા-કુંગરપુરના પહાડી મુલક નીચે, હમણાં ન્યાં બીજો વાસ કરી રહ્યા છે ત્યાં, બૌદ્ધોએ વિહાર અને સ્તૂપ બાંધ્યા હતા અને ક્ષત્રપોએ એક નાનું સરખું શહેર જ બિલું કર્યું હતું.

આ બધાંને પોપણ આપનાર હતો રોમાદિ દેશો સાથેનો ધીકતો વેપાર. જેમ આપણે માલ-મુદર ઝીણાં, વિવિધ જાતનાં કાપડ, મરી ઇત્યાદિ મસાલા અને અકીકના પથ્થરો-ત્યાં જતો તેમ પરદેશથી ત્યાંની વિશિષ્ટતાઓ (જેવી કે દારૂ, મુંદર સ્ત્રીઓ, દેવ-દેવીઓની મૂર્તિઓ અને રોમન સિક્કાઓ) અહીં આવતી.

ન્યાંસુધી રોમન સામ્રાજ્ય અખડિત હતું અને ઘોરી માર્ગો (દરિયાઈ તથા ખુશ્કી) ને આંચ આવી ન હતી અને ન્યાંસુધી ક્ષત્રપોનું રાજ્ય ગુજરાતમાં આવ્યું ત્યાંસુધી આ વેપાર ચાલ્યો. રોમન સામ્રાજ્ય લાંગવા લાગ્યું અને ક્ષત્રપોનો પગ પણ સૌરાષ્ટ્ર-ગુજરાતમાંથી ધીરે ધીરે ખસવા લાગ્યો. ગુપ્તવંશના સમ્રાટ ચન્દ્રગુપ્ત બીજાએ ક્ષત્રપોને ગુજરાતમાંથી કાઢ્યા અને ગુજરાત ગુપ્ત સામ્રાજ્યનું એક ઘટ્ટ બન્યું.

ગુપ્ત સમ્રાટોએ ગિરિનગરમાં એક ગોખા નીચો અને ક્ષત્રપોના જેવું જ માંદીનું નાણું ચાલુ રાખ્યું. મુદ્દર્શન તળાવ બાંધનાં એને પાછું સમરાવી પહેલાંના કરતાં વધારે મુંદર બનાવ્યું.

ઈ. સ. ૩૫૦ થી ૪૫૦ના માળામાં સોમનાદી રેણીકરણીમાં, દરેકજાના જીવનમાં આ ફેરફાર થયા એ આપણે જાણતા નથી, પરંતુ પાર્શ્વિક જીવનમાં એક બહુ મહત્વનો ફેરફાર થતા

લાગ્યો હતો. બૌદ્ધોએ ચૈત્યાદિની પૂજા ઉપરાંત બુદ્ધની મૂર્તિની પૂજા કરવા માંડી હતી. બીજું, હમણાં પ્રચલિત છે તેવા હિંદુ ધર્મના પાયા નંખાયા હતા, એમ આપણે ઉત્તર ગુજરાતમાં તારંગા, મહુડી અને શામળાજી અને સૌરાષ્ટ્રમાં ગોપ વગેરેનાં મંદિરોનાં ખંડિયેરો અને વિષ્ણુ-શિવ-પાર્વતી ઇત્યાદિ મૂર્તિઓના અવશેષો પરથી કહી શકીએ.

આ મંદિરો નાનાં, કેવળ ગર્ભગૃહ અને મંડપવાળા અને એમાં શિખરવાળાં હતાં. આ મંદિરોમાં બહાર અને અંદર કાતરકામ થોડું હતું, દેવ-દેવીઓની કે નર્તકીની મૂર્તિઓ પણ ઠેર ઠેર મૂકવામાં આવી ન હતી આટલું છતાં મંદિરો અને મૂર્તિઓ, જરૂર પડતાં જ સુંદર, ભાવવાહક સુશોભન (અલંકરણ) — એક કળાના નમૂના બની રહ્યાં હતાં, જે પછીના સમયમાં જોવામાં આવતાં નથી.

ત્યારપછી સૌરાષ્ટ્ર અને ગુજરાત નાનાં નાનાં રાજ્યોમાં વહેંચાઈ ગયા. સોએક વર્ષ બાદ, ધીરે ધીરે, ભાવનગર પાસે આવેલા વળા(વલભી)માં મૈત્રકાએ પોતાનું આધિપત્ય જમાવ્યું. આ વશે લગભગ ૨૫૦ વર્ષ રાજ્ય કર્યું, પણ લાંબા ગાળાની જોઈએ તેવી ઐતિહાસિક, રાજકીય, સામાજિક કે પુરાતત્ત્વીય સામગ્રી મળતી નથી આ સમયનાં શહેરો, ગામો અને બીજાં ખંડિયેરોની શોધ થઈ નથી, અને નથી થયું. કાંઈ શાસ્ત્રીય ઉત્ખનન, એટલે આ સમયના જીવનનો ચિતાર આપવો મુશ્કેલ છે.

તેથી એક-એ વસ્તુઓ પર જ ચિત્રોમાં ધ્યાન ખેંચવાનો પ્રયત્ન કર્યો છે; પ્રથમ તો મંદિરોના ઘાટમાં થતા ફેરફારો પર. સમય જતાં મંદિરોના શિખરો ઊંચાં અને વધારે અને વધારે કાતરામણવાળાં થવા લાગ્યાં. ગભારો (ગર્ભગૃહ) તેમજ સભામંડપની બહાર અને અંદર સુશોભન (અલંકરણ-decoration) વધવા લાગ્યું. મંડપો મોટા થવા લાગ્યા, એટલું જ નહિ, પણ અંદરના થાભલાઓની સખ્યા વધવા માંડી અને એઓની ઊંચાઈ પણ વધવા લાગી; જો કે એની પ્રચુરતા આપણે ૧૦ મા સૈકાની પછીનાં મંદિરોમાં જોઈએ છીએ તેવી હજી આ સાતમા-આઠમા સૈકાનાં મંદિરોમાં નિહાળવામાં આવતી નથી.

આ જ સાથે નોંધવાલાયક છે વલભીનાં બૌદ્ધ વિહારો, સંધારામો અને ચૈત્યો. આમાંનું એક પણ હમણાં અસ્તિત્વમાં નથી કે નથી એકેનાં ખંડિયેરો શાસ્ત્રીય રીતે ખોદી કઢાયાં, છતાં હુ-એન-સંગ અને ઇલ્સિંગ નામના ચીની યાત્રાળુઓના વૃત્તાંત પરથી આપણે નિશ્ચિત રીતે કહી શકીએ કે ઈ. સ. ૭ મા સૈકામાં વલભી એક સુંદર શહેર હોવું જોઈએ અને ત્યાં કેટલાય બૌદ્ધ (અને જૈન) વિહારો, સંધારામો અને સ્તૂપો હોવા જોઈએ. ચિત્રોમાં તેથી આ આલેખેલા છે.

બસો વર્ષો બાદ ઈ. સ. ૯૭૦ માં સોલકી (ચૌલુક્ય) રાજ્યના મૂળ ઉત્તર ગુજરાતમાં લંબાયાં. આ રાજ્ય કર્ણ, સિદ્ધરાજ જયસિંહ અને કુમારપાળના વખતમાં ફૂલ્યું અને ફાલ્યું. પછી ધીરે ધીરે એનો વિસ્તાર સંક્રાંતિવા લાગ્યો અને ઈ. સ. ૧૩૦૦ માં સંપૂર્ણ નાશ થયો આ ત્રણસો વર્ષમાં જેને આપણે ગુજરાત કહીએ છીએ તે ગુજરાત રચાવા લાગ્યું.

પ્રથમ તો આખો પ્રદેશ એક સત્તા નીચે આવ્યો બીજું, રાજ્યકર્તાઓ અહીં જ ઠરી ઠામ વસ્યા અને અણહિલપુર(પાટણ)ને એમની રાજધાની બનાવી

ગુજરાતની પ્રજા આ સમયે પણ થોડે ઘણે અંશે પચરંગી હતી. ભિન્નમાલની પડતી પછી કેટલાએ લોકો દક્ષિણ રાજસ્થાનમાંથી ઉત્તર ગુજરાતમાં અને લાટમાં છેક થાણા અને

સંજ્ઞા સુધી જંઈ વસ્યા હતા. એવી જ રીતે ચાલુક્યવંશના વખતમાં એટલે ઈ. સ. ના સાતમા સૈકામાં દક્ષિણ ગુજરાતમાં દક્ષિણના તૈત્તિરીય શાખાના બ્રાહ્મણો—જે તેલુગુ, કન્નડ અને તામિલ ભાષાઓ અસલ બોલતા હશે તે બ્રાહ્મણોએ ગુજરાતમાં સ્થાનો કર્યા હતાં. ત્યાર પછી રાષ્ટ્ર-કૂટ રાજાઓના વખતમાં તો સંજ્ઞા મંડલ મહમૂદ નામના એક આરબ મુસલમાનના આધિપત્ય નીચે હતું, અને અહીં જ ઉત્તરના મોઢોએ દેવીનાં મંદિર બાંધ્યાં હતાં.

આ વિવિધ જાતની પ્રજાને લીધે અને બીજાં કુટુંબીય કારણોને લીધે બોલચાલના વ્યવહારની ભાષાઓ જન્મી હતી. ધીરે ધીરે આ જ પ્રાદેશિક ભાષાઓમાં પરિણમી, અને બધે સંસ્કૃતની બરોબર સ્થાન લેવા લાગી. આ સમયનાં દાનપત્રો કવચિત જ પૂરેપૂરાં સંસ્કૃતમાં હોય છે.

આનો જ એક સુંદર પડો આપણે ગુજરાતમાં પડતો જોઈએ છીએ. હેમચંદ્રે એનું હૈમ વ્યાકરણ સંસ્કૃતમાં રચ્યું, છતાં આઠમા અધ્યાયમાં પ્રાકૃત ભાષાઓનું વ્યાકરણ બાંધી અપભ્રંશ ભાષાનાં તો લોકમાંથી એકઠાં કરી પદાત્મક અનેક દૃષ્ટાંતો આપ્યાં છે. બીજા વિદ્વાનોએ આનું અનુકરણ કર્યું. આમ પ્રાકૃત અને અપભ્રંશને પંડિતોએ અને સમાજે અપનાવી. એને આજ આધુનિક ગુજરાતીનું આદિ સ્વરૂપ કહી શકાય.

જેમ ભાષામાં બન્યું તેમ અન્ય ક્ષેત્રોમાં પણ બન્યું. શિલ્પ, સ્થાપત્ય, લલિત કળામાં ગુજરાતે જે બહુ મૌલિક કાળો હિંદને આપ્યો તે આ જ સમયમાં. આમાં રાજાઓ અને પ્રજાઓ બંનેએ આગેવાની લીધી. ન્યારે મૂળરાજે, કર્ણે, સિદ્ધરાજે અને કુમારપાળે સિદ્ધપુરમાં રુદ્રમહા-લય, મોઢેરામાં સૂર્યમંદિર, પાટણમાં સહસ્ત્રલિંગ તળાવ, અને પ્રભાસમાં સોમનાથના મંદિરો જીર્ણોદ્ધાર કરાવ્યો, ત્યારે એમના મંત્રીઓએ આણ, ગિરનાર, પાલિતાણા ઇત્યાદિ સ્થાનોએ સુંદર અને લગ્ય જૈન મંદિરો બાંધાવ્યાં.

સાહિત્યની સાથે ચિત્રકલાને પણ ઉત્તેજન મળ્યું. આ જ સમયે ગુજરાતમાં લઘુચિત્રો—(miniature painting) ની કળા જન્મ પામી. ગરબાનો ઇતિહાસ આપણને પૂરતો માહિત નથી. ગરબા પણ આ જ કાળમાં બહુ વિકસ્યા હોવા જોઈએ.

કમનસીબે સાહિત્યમાં દટાયેલી સંસ્કૃતિને અનુમોદન આપતી આ કાળના જીવનને આ-લેખવાને માટે પુરાતત્ત્વ સામગ્રી બહુ ઓછી છે. મંદિરોના, વાવોના અને તળાવોના અવશેષો સિવાય બીજાં કંઈ સાધનો નથી. આ સમયનું એક પણ શહેર શાસ્ત્રીય રીતે બોધાયું નથી એટલે આ સમયની નગરરચના, ઘરો, માટીનાં તથા અન્ય વાસણો, બાળકોનાં રમકડાં કેવાં હતાં એ આપણે જાણતા નથી. આ વખતના સાહિત્યમાં અણહિલપુરનાં વર્ણનો તો આપેલાં છે, પણ આ વર્ણનો પર ક્યાંકુધી આધાર રાખવો એ વિચારવા જેવું છે. શહેરના રસ્તાઓ બહુ પહોળા કે વિશાળ હોવાનો સંભવ નથી. તેમજ એ સોગદાયાજના પટની બાકે પલ્લુ જોડ્યા નહિ હોય. ઘેરી રાજમાર્ગમાંથી નાની, સાંકડી વાંકીચૂંકી શેરીઓ ફૂટતી દશે, એમ ઘોડાંકે વર્ષ પરનાં પાટણ, અમદાવાદ, સુરત ઇત્યાદિ શહેરોની રચના પરથી લાગે.

અરો, શરો અને બાકીનાં બીજાં દરેકજાનાં દશિવારોમાં ઈ. સ. ૪૦૦ પછી બહુ દૂર પડ્યો ન હતો એમ માનવાને કારણ છે. વાસણો મુખ્યત્વે માટીનાં દશે, પણ એ કેવાં દશે એ જાણવાને સાધન નથી. ઘણીનાઓ સોના ચાંદી, લીલા માણેક અને મોતીના વડર દેના. અને એમાં પણ બહુ બહુ જાતના પ્રકારો દેના એ આપણે આ સમયનાં દેવ દેવીઓનાં અને

નાગરિકાનાં શિક્ષણે પરથી કહી શકીએ. પહેરવેશ વિશે પણ થોડાંક અનુમાનો શક્ય છે. સ્ત્રીઓ ધાધરે અને ઓઢણી કે કછોટા મારીને સાડીઓ પહેરતી. સ્તનને ઢાંકવાને કાંચળી જેવી ચોળી પહેરતી. પુરુષો ધોતિયું, જમા જેવો કાટ અને પાધડી કે ફેટા માથે બાંધતા, જોકે આનો પ્રકાર નિશ્ચિત કરવો મુશ્કેલ છે.

આમ સોલંકી કાળ જે ગુજરાતનો સુવર્ણયુગ કહી શકાય તેનું યથાર્થ ચિત્ર આલેખવાને પૂરતાં સાધન નથી. સંશોધનથી જરૂર વધારે સાધનો ઉપલબ્ધ થશે. આના અભાવમાં કેવળ મંદિરો, કીર્તિસ્તંભો, વાવો, તળાવો વગેરેના જ આમાં નિર્દેશ કર્યા છે, તેવી જ રીતે ગુજરાતની પચરંગી પ્રજા પણ દર્શાવવામાં આવી છે.

શરૂઆતમાં કહ્યું તેમ આ એક પ્રાથમિક પ્રયાસ જ છે. આપણી સાધનસામગ્રીમાં ઘણી ઊણપો છે અને ઉતાવળથી ચિત્રો અને લેખ લખાયાં હોવાથી આમાં કેટલીયે ક્ષિતિઓ પણ જવાનો સંભવ છે, પરંતુ મને આશા છે કે આજે દર્શાવેલા માર્ગે આપણે સમાજને પુરાતત્ત્વે સજીવન કરેલા ઇતિહાસને સમજાવવામાં સફળ નીવડીશું.

નગરા

(ખંભાતની પૂર્વાવૃત્તિ)

અધ્યા. જે. પી. અમીન, ખંભાત

નગરકપથકનો ઉલ્લેખ ધરસેન ચોથાના એક દાનશાસનમાં તેમજ શીલાદિત્ય ત્રીજાના એક દાનશાસનમાં આવે છે. નગરક એ ખંભાતની બાજુમાં આવેલું નગરા (૨૨° ૨૧' ઉ. ૭૨° ૩૮' પૂર્વે) છે.^૧ નગરા ખંભાતની ઉત્તરે ત્રણ માઈલના અંતરે આવેલું છે; એની વસ્તી ૩૬૯૯ માણસોની છે,^૨ અને એનો વિસ્તાર ૪૦૮ ચો માઈલ છે આખું ગામ ટીંબાઓ પર જ વસેલું છે. ગામમાં અને સીમમાં અનેક નાના મોટા ટીંબા જેવા મળે છે. એમાંના કેટલાક વિશાળ અને એકદમ ઊંચા છે. ગામની ઉત્તરે આવેલ વેરાઈ માતાનો ટેકરો ૪૬ ફૂટ લાંબો, ૧૧૧.૫ ફૂટ પહોળો અને ૨૩.૫ ફૂટ ઊંચો છે. ગામની ઉત્તર પશ્ચિમે આવેલો હનુમાનનો ટેકરો પણ વિશાળ છે. એની દક્ષિણે વસવાટ છે. વસવાટ સિવાયના બાકીના ટેકરાની લંબાઈ આશરે ૪૬૭ ફૂટ અને પહોળાઈ ૪૧૦ ફૂટ છે ટેકરાની દક્ષિણે આવેલા વસવાટમાં ભરવાડવાસ અને વાધરીવાસ છે. આ ભરવાડવાસની પૂર્વ બાજુએ રખારીવાસનો ઊંચો ટેકરો આવેલો છે. આ બન્ને ટેકરા એક રસ્તો વચ્ચે આવવાના કારણે જ જુદા પડે છે. તો ગામની મધ્યે આવેલ બ્રાહ્મણ કુળિયાનો ટીંબો આગંતુકનું સૌથી પ્રથમ ધ્યાન ખેંચે છે આ ટીંબો બહુ વિસ્તૃત નથી, પણ ઊંચો છે. આવો જ એક બીજો ટેકરો ગામની છેવાડે આવેલો છે જ્યાં હરિજનોનો વાસ છે અને લોકો એને દેઠવાડાના ટેકરાના નામથી ઓળખે છે, ગામની બહાર થોડાક અંતરે ઉત્તર દિશામાં 'રતનશાહની' ટેકરી આવેલી છે આ ટેકરીની સાથે રોમાંચક કથાઓ સંકળાયેલી છે. એની બાજુમાં ગંગાદેવ મહાદેવ છે ત્યાંથી થોડેક અંતરે પૂર્વ દિશાએ વિશાળકાય વડ છે જે 'દરિયાઈ વડ' કહેવાય છે અને એની પૂર્વમાં થોડેક દૂર નાનો ટેકરો છે. એક બીજો ટેકરો ગૌમતેશ્વર મહાદેવની પૂર્વમાં આવેલો છે. ગામની સીમમાં રખડતાં આવા ઘણા નાના

૧. મૈત્રકાલીન ગુજરાત, પૃ ૧૮૩

૨. સને ૧૯૬૧-૬૨ ના સેન્સસ રિપોર્ટના આધારે-પુરુષો ૧૯૬૪ + સ્ત્રીઓ ૧૭૩૫ = ૩૬૯૯

નાના ટેકરા નજરે પડે છે.

વસવાટ સિવાયના લગભગ બધા ટીંબાઓ પર આજે ખેતી થાય છે, પણ હળની કાશ બહુ ઊંડી ખૂંપતી નથી. એમાંથી મોટી સંખ્યામાં માટીનાં ઠીકરાં નજરે પડે છે અને ખેતીમાં ખાસ યરકત આવતી નથી. વાવેતર પહેલાં અને એકાદ-બે વરસાદ પછી આપણે જઈએ તો આપણને પણ ઠીકરાં જોવા મળે છે. ડો. આર. એન. મહેતા અને ડો. ઉમાકાંત શાહે જમીનની સપાટી પરથી મળી આવેલાં આ ઠીકરાંઓનું સંશોધન કર્યું છે અને એ ઇસવી સનની શરૂઆતનાં માલૂમ પડ્યાં છે.

આ ટેકરાઓ પરથી લોકોને અવારનવાર ઘણા સિક્કા મળી આવતા જોમ. કેટલાય સિક્કા સોના અને ચાંદીના પણ હતા, પણ આ બધા સિક્કા સોનીઓની દુકાને વેચાઈ ગયા છે. થોડાં વર્ષો પહેલાં કૂતરીએ જોડ જોદી હતી અને એમાંથી થોડા સોનાના સિક્કા મળ્યા હતા. એમાંનો એક સહભાગ્યે બચવા પામ્યો છે. આ ઉપરાંત તાંબાના ઘણા સિક્કા મળી આવે છે. એમાંના બે સિક્કા અમે શ્રી રજની પારેખ આર્ટ્સ કોલેજ મ્યુઝિયમ માટે મેળવી શક્યા છીએ. આ સિક્કાઓ પર પાછળની બાજુએ ત્રિશૂલનું પ્રતીક છે અને મૈત્રકકાલીન યુગના હોવાની સંભાવના છે.

આ ટેકરાઓમાંથી મળતી ઈંટા પણ ઉલ્લેખનીય છે. એ વજનમાં એકદમ ભારે અને કદમાં બહુ મોટી છે. લોકો આજે પણ એને અઢાર-શેરિયા ઈંટના નામથી ઓળખે છે. સામાન્ય રીતે આ ઈંટાની લંબાઈ દોઢ ફૂટ, પહોળાઈ એક ફૂટ અને જડાઈ ત્રણ ઇંચની જોવા મળે છે. ઈંટા પરથી પણ આ ટેકરાઓની કંઈકે પ્રતીતિ થાય છે.

આ નગરા વિશે આસપાસના લોકોમાં ઘણી લોક-કથાઓ પ્રચલિત છે. કેટલીક પૌરાણિક કથાઓ રકંદપુરાણના કૌમારિકાખંડમાં મહીનગરના નામથી જોવા મળે છે.^૩ મહીસાગર સંગમ-તટે આ સ્થળ આવેલું અને નારદમુનિના મનમાં એ વસી ગયેલું એટલે દિમાલયની તળેટીમાં આવેલા કલાપગ્રામમાંથી હારીત મુનિ સહિત છવ્વીસ હજાર બ્રાહ્મણોનો અહીં વાસ કરાવ્યો.^૪ નારદે એમને વસાવ્યા હોવાથી એઓ નારદીય બ્રાહ્મણ કહેવાયા. આજે આ બ્રાહ્મણોનું કક્ત એક જ ઘર છે ! પણ પ્રચલિત લોકકથા તો ગર્દભસેનની છે.^૫

આ નગરા તે પ્રાચીન કાળનું ખંભાત. ખંભાતનાં ઘણું નામ જોવા મળે છે. રત્નમણિ-રાવ જોટ ખંભાયત, રતંભતીર્થ, ત્રંબાવતી-તામ્રવિપ્તિ, મહીનગર, ભોગવતી, પાપવતી અને કર્ણાવતીનો ઉલ્લેખ કરે છે.^૬ આમાં મહીનગર અને ત્રંબાવતી નામ નગરા સાથે સંકળાયેલાં છે. મહીનગર નામ રકંદપુરાણના કૌમારિકાખંડમાં ઘણી વખત જોવા મળે છે.^૭ એ નગર નારદમુનિએ વસાવ્યું છે એમ લખ્યું છે. અને નગર શબ્દ લગાડેલાં સહેરો પ્રસિદ્ધ હોય તો

૩. ખંભાતનો ઇતિહાસ, પૃ. ૨૦

૪. કૌમારિકા ખંડ (આ. કર્તા. નર્મદાસંકર. અ. મદ્ર), અધ્યા. ૫. પૃ. ૪૯

૫. શામળ કવિએ બગીચ પૂતળીઓની વાતમાં સમ્બોધ કરી છે.

૬. ખંભાતનો ઇતિહાસ, પૃ. ૮

૭. અધ્યાય. ૪૮ અને ૪૯ માં ખાસ. અધ્યા. ૪૯ માં નારદેએ વસાવ્યું એવું લખ્યું છે. તીર્થ વરીકે મહીસાગર સંગમતીર્થ અને કુપ્ત તીર્થ તથા નગર વરીકે મહીનગર અને રતંભતીર્થ વારંવાર આવે છે. કૌ.ખંડમાં તામ્રવિપ્તિ કે તામ્રવતી નામ નથી, પણ અધ્યા. ૩૧ માં 'તામ્રપ્રાગઢ' નામ મળે છે અને નામરખંડમાં તામ્રવિપ્તિ નામ મળે છે.

એને એકલું 'નગર' કહેવાના દાખલા ઘણા મળે છે, એટલે મહીનગર લોકોમાં એકલું 'નગર' કે 'નગરક' એ નામથી પ્રસિદ્ધ પામ્યું એમ જણાય છે. એ શહેર હાલના નગરા ગામની જગ્યાએ હતું.^૮ નગરા ગામમાંથી જ્યાદિત્યના મંદિરમાંથી વસ્તુપાલના સમયના બે લેખ એ મંદિરનો જીર્ણોદ્ધાર કરાવ્યાના મળ્યા છે. એમાં શ્રીનારદમુનિવિનિવાસિતધ્રીનગરક-મહાસ્થાને । એ પ્રમાણે ઉલ્લેખ છે, એટલે સ્કંદપુરાણના નારદમુનિએ વસાવેલ મહીનગર સાથે એ મળી રહે છે આ નગરકનો ઉલ્લેખ વલ્લભીના તામ્રશાસનમાં મળે છે. અને વસ્તુપાલના સમયમાં તો એ ઘણું પ્રાચીન મનાતું. એ ઉપરથી ઈ. સ ની સાતમી સદીમાં એ સારી સ્થિતિમાં હતું એમ માનવાને કારણ છે. વિશેષમાં પાણિનિના વ્યાકરણ સાથેના ગણપાઠમાં 'મહીનગર' નામનું એક શહેર શ્રી સી વી. વૈદ્ય ગણાવે છે.^૯ અને ભારતની પ્રાચીન કે અર્વાચીન ભૂગોળમાં શોધ કરતાં એ નામનું બીજું કોઈ સ્થળ જડતું નથી. તો પછી સ્કંદપુરાણે સ્પષ્ટ ઉલ્લેખ કરેલું નારદમુનિનું વસાવેલું મહીનગર એ જ હોય એમાં શંકા કરવા જેવું નથી આ ઉલ્લેખોને સત્ય માની આગળ ચાલીએ તો નગરા છેક પાણિનિના સમય જેટલું પ્રાચીન (ઈ. પૂ. આઠમી સદીનું) ન માનીએ તોપણ પત્તજલિના મહાભાષ્યના સમય જેટલું પ્રાચીન (ઈ. પૂ. બીજી સદીનું) માનવાને વાંધો નથી.

નગરા સ્થાનિક લોકોમાં ત્રંબાવટી નામથી પણ જાણીતું છે. ત્રંબાવટી એ સંસ્કૃત તામ્રલિપ્તિનું ભ્રષ્ટ રૂપ થયેલું ગણાય છે. સિદ્ધાસનખત્રીસી અને પંચદંડછત્રપ્રબંધ પ્રમાણે એ નામ વિક્રમ રાજના વખતનું છે એમ મનાય. એ પ્રબંધોની રચના ગમે ત્યારે થઈ હોય, પણ એમાં વાતોના રૂપમાં નોંધાયેલી પરપરા અર્વાચીન નથી. ગર્દભસેનની વાતને વિક્રમાદિત્યની ઐતિહાસિક વ્યક્તિ સાથે સંબંધ હોય કે ન હોય, પણ વિક્રમના નામનું સાહચર્ય એ પરંપરાને ઈ. સ. ની ૬ઠ્ઠી સદીની પૂર્વે તો મૂકે જ.^{૧૦} આ બે ઉલ્લેખ ઉપરાંત ગુજરાતી જૈન વાતો અને રાસાઓમાં 'તામલિતિ'—તામ્રલિપ્તિ બદરનો ઉલ્લેખ છે ^{૧૧} શ્રી જિનપ્રભસૂરિના પ્રભાવક-ચરિત (સં ૧૩૩૪) માં શ્રી હેમચંદ્રસૂરિપ્રબંધમાં આ બાબતનો સ્પષ્ટ પુરાવો મળે છે. આ પ્રબંધમાં શ્લોક ૩૨ માં હેમચંદ્રસૂરિ જે બાતમાં હતા તે માટે સ્તંભતીર્થ શબ્દ વાપર્યો છે. અને તુરત શ્લોક ૪૧ માં ત્યાંથી પ્રસ્થાન કરવા માટે તામ્રલિપ્તિ શબ્દ વાપર્યો છે. ઉપરાંત કાવીતીર્થના લેખમાં એક જ શ્લોકમાં સ્તંભતીર્થ અને ત્રંબાવટી નામ આપેલાં છે.^{૧૨} પણ આ નામ કેટલું પ્રાચીન છે એ સ્પષ્ટ થતું નથી

આજનું ખંભાત તો આઠમા-નવમા સૈકાથી પ્રાચીન જણાતું નથી આજે ખંભાતની નજીકમાં દરિયો છે, પણ પહેલાં એ નગરા (નગરક) નજીક હતો ^{૧૩} ઈસવી સનની આરંભિક

૮ ખંભાતનો ઇતિહાસ, પૃ. ૨૧

૯. C. V. Vaidya—History of Sanskrit Literature, Sec IV. p. 93-94. એમાં પાણિનિના ગણપાઠ ઉપરથી નગરોની યાદી આપેલી છે.

૧૦. જુઓ Veber Indische Studien, Vol XV p. 252. એમાં સિદ્ધાસનદ્વાત્રિશિકા વિશે લખતાં સાબરમતી અને મહી નદીઓની વચ્ચે તામ્રલિપ્તિનો ઉલ્લેખ કર્યો છે.

૧૧. આ ઉલ્લેખ રા ભીમજી માણેકે છપાવેલા પ્રાચીન જૈન રાસાઓની વાર્તામાં છે

૧૨. ત્રંબાવટીતિ પ્રતિનામધેય શ્રીસ્તમ્મતીર્થ નગરં પ્રસિદ્ધમ્ ॥

૧૩. મૈત્રકાલીન ગુજરાત, પૃ ૫૫૬

સદીઓમાં નગરક (નગરા) મોટું મથક હતું.^{૧૪} મૈત્રકકાળનાં (ઈ. સ. ૪૭૦ થી ૭૮૯) તામ્રશાસનોમાં એની સાદી નોંધો મળી આવે છે અને એ પ્રમાણે નગરકપથકનો વિસ્તાર ઉત્તરે બાર માઈલ ગુંધી ગ્રીંધી શકાય છે.^{૧૫} આ નગરક સારું બંદર હતું, પણ ત્યાં પુરાણ થતાં દરિયો ચારેક માઈલ દૂર ગયો ને નગરકની જાહેજલાલી ગઈ ને એના પરિણામે સ્તંભતીર્થ (ખંભાત) વસ્યું. અને હવે ત્યાંથી પણ દરિયો દોઢ-એ માઈલ દૂર જતો રહ્યો છે ને તેથી જ ખંભાત પડી ભાંગેલું અને એનું સ્થાન મુરત બંદરે લીધેલું.

આ નગરની પ્રાચીનકાલીન જાહેજલાલી બતાવતા શિલ્પના કેટલાક અલંકૃત નમૂનાઓ આજે પણ દૃષ્ટિગોચર થાય છે, જેમાં બ્રહ્મા, જય-આદિત્ય અને હુદનાથ મુખ્ય છે. બ્રહ્માનું સ્વતંત્ર મંદિર નથી, પણ શ્રી. હસમુખભાઈ ત્રિવેદી વગેરેના મકાનમાં એની પ્રતિમા પૂર્વાભિમુખ મૂકેલી છે. આ પ્રતિમા ઊંચી, લવ્ય, ગાંભીર્યથી ભરપૂર અને દર્શનીય છે. એની ઊંચાઈ ૬'-૮" છે અને પહોળાઈ ૨'-૮" છે. એના અંદરના જમણા હાથમાં શુચિ (આહુતિપાત્ર), બહારના જમણા હાથમાં માળા, અંદરના ડાયા હાથમાં પુસ્તક અને બહારના ડાયા હાથમાં કમંડળ છે. ગાગર જેવડા ગાંભીર્યસૂચક પેટનો ઘેરાવો ૩'-૮" છે. આ ચતુર્મુખી બ્રહ્માનાં ત્રણ મુખ દેખાય છે. દાદી એકદમ સુંદર અને મૂંઝા અણિયાળી છે. માથે મુગટ, ગળામા દાર અને કાને કુંડળ શોભી રહ્યાં છે. વિશાળ વક્ત્રસ્થલ પર ઉપવીત ધારણ કરેલ છે. નીચે બે દિક્ષપાલ છે તેઓને બે હાથ અને એક મુખ છે. ડાયા હાથમાં કમંડળ છે અને જમણા હાથ અભય મુદ્રા સૂચવે છે. આ દિક્ષપાલો નીચે બે સુંદર મઝાના હંસ છે.

બ્રહ્માજીની બન્ને બાજુએ બે દેવીપ્રતિમાઓ છે. આ બન્ને પ્રતિમાઓ લાવણ્યભરપૂર છે. ગળામાં મંગલસૂત્ર, પગમાં તોડા અને હાથે કંકણ શોભી રહ્યાં છે. જમણી બાજુની પ્રતિમાનો જમણો હાથ ખભા પર ટેકવેલો છે, અને ડાયા હાથમાં કુંભી છે, પણ કુંભી પેકડતી વખતે થોડાક દેખાતા નખ અને એનું સૌંદર્ય અદ્ભુત છે. માથાનો મુગટ પણ સોહામણો છે.

બ્રહ્માની આવી લવ્ય પ્રતિમા ભારતભરમાં દ્રક્ત બે ઠેકાણે જ જોવા મળે છે : એક પુષ્કરશમાં અને બીજી ખેડબ્રહ્મામાં. વક્ત્રલ-વિધાનગરમાં આવી એક લવ્ય પ્રતિમા છે, પણ એ અહીંથી-નગરાથી લઈ ગયેલા. આવી મનુષ્યાકૃતિના કદની બીજી પ્રતિમા જ્યાદિત્યની છે. માથે મુગટ અને પગ હોલખૂટથી ઢંકાયેલા છે. બન્ને હાથમાં કમળ છે, લગભગ ૬ ફૂટ એની ઊંચાઈ છે અને એની બન્ને બાજુએ સૂર્યાણીની બે પ્રતિમાઓ છે. એક પ્રતિમાનો હાથ ખંડિત છે. બન્નેની નીચે લેખ છે. સંવત ૧૨૬૨ માં અતિદૃષ્ટિને કારણે આ સૂર્યમંદિર પડી જવાથી વસ્તુપાળે એને સમરાવ્યું એવી એમાં નોંધ છે. આ મૂર્તિ ઉપરથી એનું મંદિર મોદેરાના સૂર્ય મંદિર જેવડું હશે એમ કલ્પના થઈ શકે. ખંભાતમાં બીજું સૂર્યમંદિર બાલ્લાદિત્યનું હતું એવો ઉલ્લેખ કૌમારિકા ખંડ અધ્યા. ૩૬ માં જોવા મળે છે.

પણ આગંતુકનું ધ્યાન ખેંચે તેવી પ્રતિમા રગારીવાસના ટેકરા પર ખુદ્દામાં આવેલી છે તે આસનસ્થ છે. અને એ રીતે એની ઊંચાઈ ૪'-૬" તથા પહોળાઈ ૩'-૬" છે. એ બૂરા પથ્થરમાંથી બનાવેલી છે અને બન્ને હાથ ખંડિત છે. મૂર્તિ ઘણા વખતથી બદાર ખુદ્દામાં પડેલી હોવાથી ઘસાઈ ગયેલી છે. લોકો એને હુદનાથ તરીકે ઓળખાવે છે, કેટલાક એને જૈન

૧૪. મોદેરા સર્વસંબંધ. પૃ. ૮૬૩

૧૫. મૈત્રકકાળોન ગુજરાત. પૃ. ૧૮૩

તીર્થંકર પણ કહે છે, પરંતુ ચહેરો અને એનાં લાંછન એટલાં બધાં ઘસાયેલાં છે કે કંઈ ચોક્કસ નિર્ણય તારવવો મુશ્કેલ છે. આજે પણ લોકો મરણ પછી આ મૂર્તિ આગળ અમુક ક્રિયાઓ કરે છે. આ ઉપરાંત નગરામાંથી મળેલી કેટલીક ખંડિત મૂર્તિઓ ખંભાતમાં ત્રણ દરવાજાથી દક્ષિણે આવેલી જુમા મસ્જિદમાં પડી છે, જેમાં બ્રહ્મા અને સાવિત્રીની ખંડિત પ્રતિમા છે. એની નીચેના ભાગમાં સંસ્કૃતમાં સંવત ૧૨૨૭ નો લેખ છે.

આ પરથી આપણે ચોક્કસ અનુમાન કરી શકીએ કે ખંભાતની પૂર્વાવૃત્તિરૂપ નગરાના પેટાળમાં પ્રાચીન સંસ્કૃતિના અવશેષો દટાયેલા હોવા નોંધીએ. આ ટેકરાઓનું ઉત્ખનન કરવામાં આવે તો ચોક્કસ માહિતી મળે અને એ દ્વારા કદાચ ગુજરાતના ઇતિહાસમાં નવું પ્રકરણ ઊઘડે.

ICONS OF SŪRYA AND SŪRYĀNĪ FROM VĀVDĪ

BY

Syt. B. P. Dani, Rajkot

Three icons of Sūrya, Sūryānī and Mātrkā are found from Vāvdī, five miles north of Bābrā in Amreli District, Gujarat State. These images have been found while digging the public way for new construction at the depth of 6 feet. They are in good condition. Now these images are brought to Watson Museum of Antiquities, Rajkot.

The icons of Sūrya and Sūryānī bear resemblance to each other in the craftsmanship and in the type of the stone used for them. The characteristics of the images are of Sūrya and Sūryānī.

The icon of Sūrya is carved out from the sandstone in relief with all its characteristics except the prabhāvali. Instead of prabhāvali a niche with an arch is incised but not carved. The icon of Sūrya is in samabhanga posture measuring $45 \times 16\frac{1}{2} \times 7\frac{1}{2}$ m.m. The image appears in good condition except the eyes. In place of real eyes artificial eyes have been inserted and as such that part is defaced. The mouth of the image seems to be half open. The hands are bent from the elbow carrying the full grown lotuses reaching the lower end of the mūkuṭa. The lotuses are not of conventional type, but seem to have designical approach. Sūrya wears a Kīritamukuta on the head and small ear-rings in the ears. The Lāñchana of this image is similar to that of the Sūrya icon of Kherālū,¹ but here it looks a pendent. Sūrya wears a simple mālā. Generally the Sūrya icons bear a Kavaca, but it is not traceable here while the Upavita is visible. Generally the Sun icons wear loins as in Kherālū, but here it seems that the loin has been replaced by short dhoti. The image of Sūrya wears simple girdle on the waist. The folds and ends of dhoti are not realistic but designed. The icon wears whole-boots upto the knees as prevalent in the northern style of Sūrya images.

To the right of Sūrya image below there is a praying figure depicted either Pingala or Devotee measuring 16×5 m.m. This figure is half seated with left leg raised. He wears an Iranian style cap on the head. On the left to the Sūrya image below is an attendant or Danḍī, measuring 16×5 m.m. standing with Khadga in right hand and left hand is raised. He also wears an Iranian cap.

The icon of Sūryānī is in samabhanga posture, measuring $30 \times 15 \times 7\frac{1}{2}$ m.m. The image appears in good condition except the eyes. In place of real eyes artificial eyes have been inserted and as such that part is defaced. The left hand of the image is in natural condition carrying the full grown designical lotus reaching in the lower line of Mukuṭa. The right hand is also in natural position carrying a Kalaśa. The Sūryānī wears a Karandamukuta and big ear-rings in the ears. Ear-rings are touching to her shoulders. Sūryānī wears a round mālā of beads and ekāvalī. Ekāvalī is reaching to her navel. Sūryānī wears a transparent coiffeure and simple girdle on her waist.

On left and right to the image of Sūryānī below are the female attendants, measuring $6 \times 2\frac{1}{2}$ m.m. and standing with lotuses in the left and right hands respectively.

These icons resemble the icons of the same deities in their major characteristics while in minor characteristics they differ from them. The Matsyapurāṇa, Bṛhatsaṃhitā, Agnipurāṇa and Viṣṇu-dharmmottara state that in northern tradition of Sūrya images, the Sun is attended by two male and two female figures. The male figures are the Pingala or Kuṇḍī on right holding either sword or writing implements and Danḍī on left holding the Śūla (staff). The two female figures are his queens Niṣkumbhā also called Chāyā on his right and Rājñī also called Prabhā or Suvarcasā on his left².

In our present images Pingala is not carved as scribe³ but he is described here to pray the Lord sun in sitting posture as in the Sūrya image from Abneri. In Abneri Sūrya, Pingala is depicted to pray the 'Lord Sun' in standing posture as his two hands are found together in praying form.⁴ No amazons and attendants are carved in our present described images.⁵

1. Annual Report of the Department of Archaeology, Baroda State 1933-36, p. 29, plate IV
2. Cannon of Hindu Iconography by D. D. Shukla, D. Litt, p. 330
3. Ancient India, Journal-6, Jan. 1950, p. 29, Geographical and Chronological factors in Indian Iconography by C. Sivarammurti
4. Journal of the Madhya Pradesh Itihasa Parishad, No. 2, 1950. Some Unpublished Sculptures of standing Sūrya from Rajasthan by R. C. Agrawala, M. A., plate IV
5. Ancient India, Journal 6, Jan. 1950, p. 29

The Kherālu Sūrya and the flanking images throw some more light on the consorts of Sūrya. The Sūrya and his consort from Siddhpur-patan, Dhank, and our present images are found with one sided flanking figure and so some puzzle was their for considering the icons. The consorts of Kherālu Sūrya are standing to the right and left, holding the lotuses in the right and left hands and Mātulunga in the left and right respectively. These images are prepared as described in the texts. One remarkable point in our present image of Sūryānī is that she holds a Kalaśa in her right hand. Uptil now no icons bearing such resemblance are found, so that we can say that it may be the draw back of the later period in which these icons are prepared.

These icons are flat from the surface, a style prevalent in the northern Indian sculptures in medieval period. So many details remain to be carved out and as such these icons cannot throw more light for a scholar. These icons seem somewhat rough in their preparation and not fully carved though we can learn that the images have not lost their spiritual grace and beauty. The physical structure of the images are not massive but thin. Ornaments and clothes are not so richly decorated.

The icons of Sūrya and his consorts from Kherālu have a dated inscription of Vikrama year 1293 (1236 A. D.). The icon of the same deities in Dhank is later than the Rajkot figure and has affinities with the Western Saurashtra sculptures⁶ which can be assigned easily to the 14th or 15th cent. A. D. on referring to the dated inscription of Kherālu Sūrya which resembles to the Rajkot figure. Our present images are also differing in some particulars and the style of craftsmanship from the figures from Dhank. The figures of Dhank are assigned to the 14th or 15th cent. A. D. Our present images may go back in their date and as such they may be assigned some what later than 14th or 15th cent. A. D. i. e. to 16 Cent. A. D. The Sun icons at Pij belong to 16th Cent. A. D. Saurashtra was flowing with different schools of art having their own local style in the later medieval period. The Sūrya icons from Pāshtar in Hālār District are exhibited in Jamnagar Museum of the 11th & 16th Cent. A. D. This Pāshtar Sūrya differs in many of the details from our present images and as such we can assume that these icons are prepared as per local style.

I acknowledge my due to Prof. P. N. Bhatt and Shri J. M. Nanavati, Archaeologist, Government of Gujarat, Rajkot for their inspiration and kind guidance in preparing this paper.

6 Elements of Hindu Iconography by T. Gopinathrao, Vol 1, Part-II, pp 87-88

7 Struggle for Empire, p. 641 Bhartiya Vidya Bhavan series

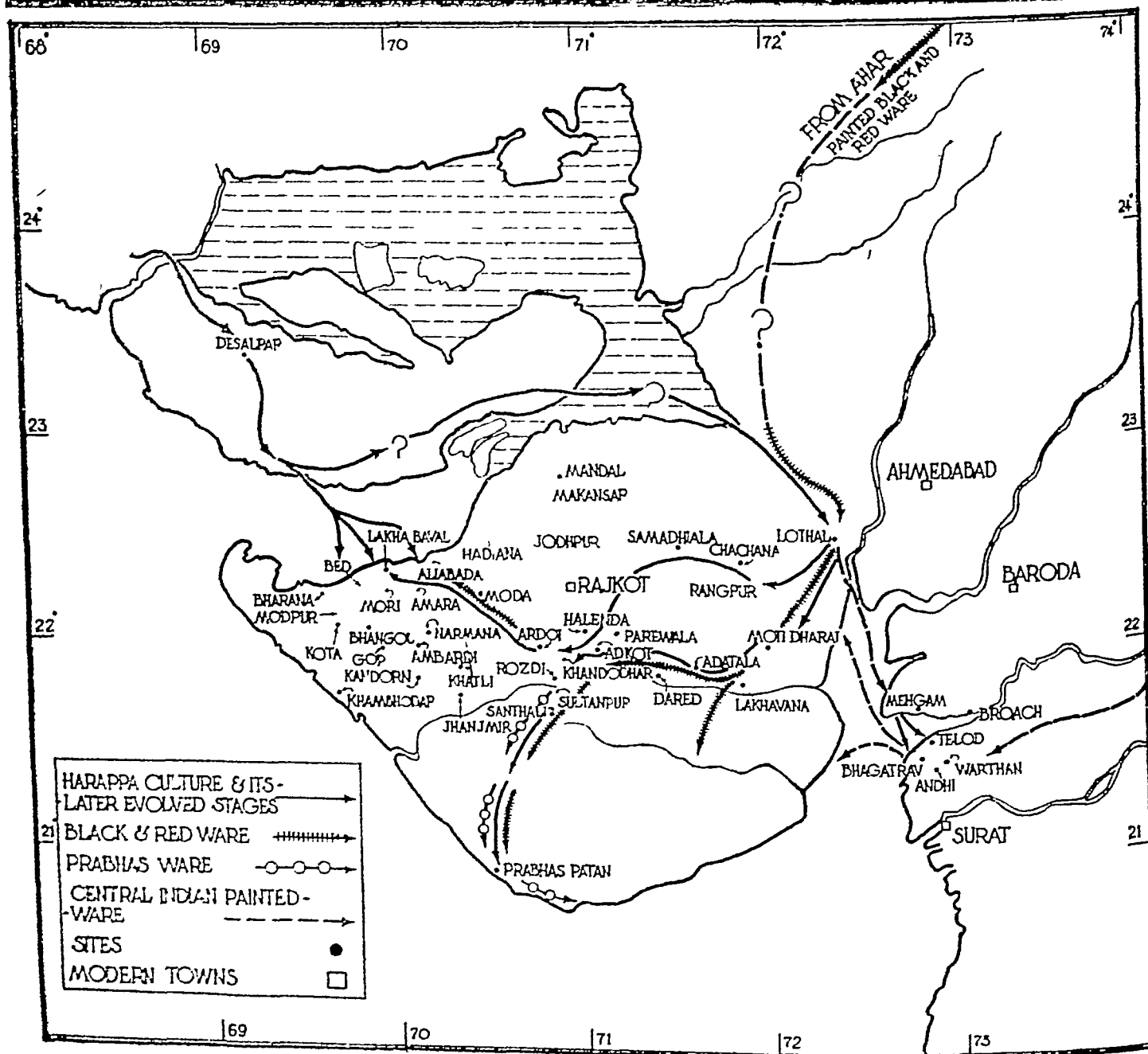
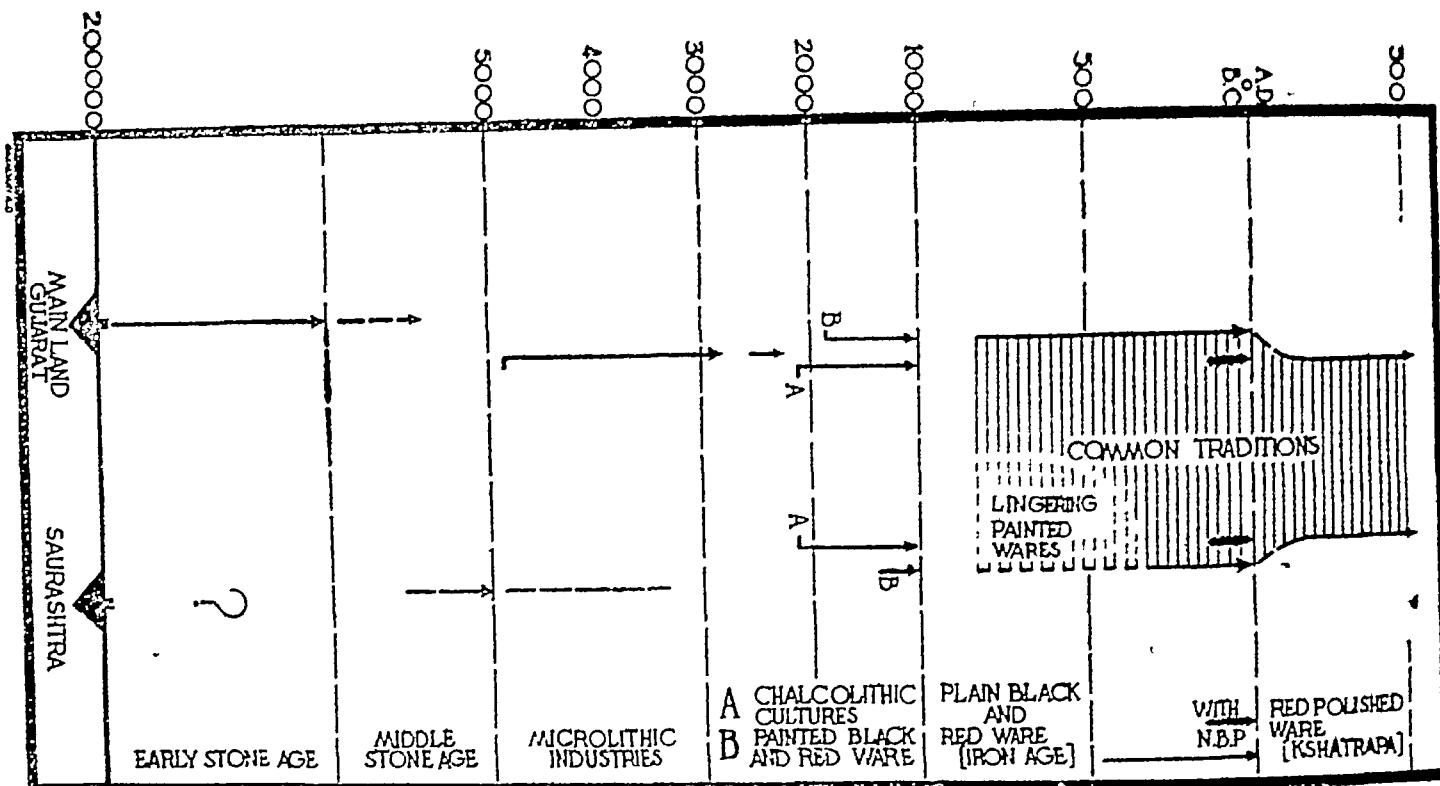
8 Archaeology of Gujarat by H. D. Sankalia, p. 159

THE DATE OF THE DANCING HALL OF THE SUN TEMPLE, MODHERĀ

Syt. M. A. Dhaky

(Summary)

Till this day, the famous Sun Temple at Modherā and its accessory structures are unsuspectedly believed to be of the same age. The Terrace with its flight of steps, the Tank with its ancillary chaplets, the Main Shrine with its Closed Hall and the Dancing Hall with its *torana* when subjected to close style-critical analysis, reveal facts that should modify the older conception. There are dissimilarities, in spite of a veil of certain common features, between the style of the Main Shrine and the Dancing Hall. The difference in the treatment of architectural members and in the plastic qualities of the figural and decorative carving which is both more elaborate and inferior in the Dancing Hall, and the alliance of the latter with the temples and other monuments belonging to Karnadeva's time are pointers to its addition at a date later than 1027 A. D. to which the Main Shrine, the Terrace and the Tank are assignable. Although the co-axiality of both camouflages the truth, the construction in the Western portal of the Dancing Hall and the encroachment of the *torana* on the flight of steps of the Terrace confirm this inference. Solanki potentate Bhīmadeva I has been conjectured to be the maker of this superb temple. If that surmise is true, especially in view of the vastness and ornateness of the conception, it may be averred that Karnadeva himself may have been responsible for interpolating this Hall somewhere when the Karnasāgara project was in operation near Modherā.



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Archaeology Section

**THE ARCHAEOLOGICAL DICHOTOMY OF GUJARAT-
SAURASHTRA**

Mr. K. V. Soundara Rajan

The Saurashtra peninsular landmass has had a favoured position in the historic process of Western India. While it was the landing board of all maritime enterprises, both commercial, cultural, as well as political it has equally been the blind alley of all inland impacts and intrusions. Thus its culture is an agglomerate of the foreign and Indian talents on the one hand and of extra peninsular and maritime influences on the other. It is also to be noted that all maritime or coastal entries brought new and vigorous elements, and supplied the contexts for culture-impact or fusion with the corresponding penetrative activities working from the main-land. By the same token, the coastal fringes particularly of the Halar-Sorath districts were often more inhabited than the rocky central plateau land.

It is interesting to note that Saurashtra has not produced any palaeolithic or old Stone Age relics. Apart from the non availability of the suitable raw materials it is rather feasible to think that during the palaeolithic times of mainland Gujarat, Saurashtra might have been an island virtually cut off from the main land and got a land bridge only from the time of the Middle Stone Age, towards the very close of the pleistocene. We have many sites of the flake-blade-scraper-burin-tool complexes discovered in Halar, Madhya Saurashtra, Sorath and Surendranagar¹ districts, fabricated on jasper, chalcedony and chert which occur in extensive veins associated with the trap country. These tools are frequently found imbedded in the calcareous conglomerate deposits on the river banks, as for example on the Bhadar in many of its stretches, particularly upstream, and are found laid right on the natural bed rock, so as to indicate that they were the earliest available cultural deposits over the natural bed-rock and the first handiworks of tool making early man.

It is again rather curious that we do not have any truly extensive and well established microlithic industries, in Saurashtra, excepting where they are clearly integral parts of a chalcolithic semi-urban culture diffu-

1. Indian Archaeology—A Review, 1957-58, p. 18 and 1958-59, p. 69

sion in this region. Such sites have, in good number been found² particularly in Halar and Sorath districts and a few in Surendranagar district, indicating that the N E. and S. E. Saurashtra had been important coastal boards for cultural movements. Bruce Foote had mentioned many microlithic sites in the Dhari Prant of Amreli district, but these are apparently all of chalcolithic affiliation, since we have many chalcolithic sites in that area. It is only at Rangpur where we have some microliths found in a gravel lens separated by a sterile layer prior to the protohistoric Harappan occupation. The characteristic tools are blades and large elongated crescent etc. and these may be the surviving and degenerate elements of the Middle Stone Age industries of Saurashtra, and are not truly microlithic in size and character. Alternately, they may be products of influence working from Sabarmati loessic belt and felt only on the area close to the Gulf of Cambay,

This lack of the true microlithic industries in Saurashtra should be taken as rather a progressive feature, since, it only implies that after the considerable late Middle Stone Age tool industries, possibly spilling well into the Holocene or recent era, the Chalcolithic revolutionary movement which reached here across Kutch littoral completely superceded all the purely lithic vestiges, and brought in decent and stable, if incipient, semi-urban and urban village communities³. The microliths associated with the pottery using cultures were clearly using crested guiding-ridge in all the sites where they were found. They are not thus epi palaeolithic, but chalcolithic microliths.

Undoubtedly the Harappa culture intrusion, if in a relatively later context than the Indus valley proper, was the greatest single epoch of prime significance to the barren and relatively sequestered flats of Saurashtra land mass, and produced sufficient incentive for cultural progress for more than one millenium, although not uniformly, throughout the peninsular. It also transmuted itself for survival into the subsequent Lustrous Red Painted Ware industry and was besides, enriched by a chocolate on buff slip painted industry as typified at Rangpur⁴ and other sites at Halar and Sorath districts. It also received, seemingly kindred influ-

2. P. P. Pandya-Explorations in Halar and Sorath Districts of Saurashtra, Journal of M. S. University of Baroda, Vol. III, No. 2, Oct. 1954; Also Indian Archaeology-A Review 1955-56, P 7
3. Ibid : also B. Subba Rao,-Microlithic techniques of Mahesvar-Excavation of Mahesvar and Navda Toli-1958, Poona-Baroda
4. Indian Archaeology-A Review 1953-54, p. 7

ences from the Rangmahal wares in the prechristian centuries, and thrived in the form of a black-on-red painted ware in medium as well as coarse fabric designated as the 'Vasai Ware' by some workers-and is found both in Halar district of Saurashtra as also in North Gujarat and Kutch, presumably in a post-chalcolithic context.

It is particularly interesting to note⁵ that even the microliths auxiliary to the chalcolithic facies, are largely associated with the Harappan and the transformed Harappan fabrics and not with the post-chalcolithic coarse red fabric. This would show the complete disuse of the microliths, as the metal-using urban cultures progressed. We may probably place this between the last quarter and middle of the first millenium B. C.

An important topographical feature of the 'neck' of Saurashtra across the gulf of Cambay and Kutch is the occurrence of many arterial and centrifugal river streams which convey culture impulses into the Saurashtra. All around the Cambay gulf we have the Tapi, the Narmada, the Sabarmati, the Mahi, Sukh Bhadar, Ghelo, Shatrungi, etc., and further up the Banas, Saraswati, etc. losing themselves in the little Rann of Kutch, proving great culture-bearers which enriched Saurashtra. Thus while the routes taken by the Indus valley settlers could have been largely across and around the Kutch wastes into northern Saurashtra as shown by sites of clear Harappan affiliation like Kanthkot, Lakhpat and Desalpar (Gunthri) in Kutch, an equally powerful and historically more significant culture-current came from Machyadesh as well as Malwa out of a fusion of the contemporary cultures of Central India, and entered perhaps through the 'neck' into the south-eastern Saurashtra, and was destined to produce the Epic colonisation of the heroes of Krishna-Vasudeva group in its history. While the diffusing Harappa culture became effete, degenerate and extinct variously in different parts of northern, northeastern and western Saurashtra, the story was continued, though not in relay but in overlaps by some of these dark skinned indigenous culture-bearers whose ceramic element was the black-and-red pottery of the archaeologists. Apart from the stability and stamina secured through these reinforcing contingents, the early inhabitants of eastern Saurashtra also benefited by the painted ceramic techniques of both the Harappan pioneers as well as the Central Indian counterparts, the latter spreading their ideas through the Narmada-Tapi estuary and across or around the narrow gulf into the southeastern shores of Saurashtra. The amalgam, is represented by the 'Prabhas Ware' of the archaeologists, discovered convincingly at the ex-

5. P. P. Pandya op. cit.

tensive habitation site of Somnath (Prabhas Patan)⁶ and seen occurring in limited zone particularly in south-eastern Saurashtra. At its northern limit, it occurs at Rozdi where the levels of 1A and 1B are taken as corresponding to sub-periods 1A and 1B of the Prabhas site itself. Prabhas Ware being taken as having cultural or technical indebtedness to Harappan fabric, since it coexists with Harappan levels of Rozdi—a thing not obtaining at Prabhas—we may have to infer that at Rozdi, Prabhas Ware existed in an earlier rudimentary stage than at Somnath. This is also further reinforced by the occurrence of a kind of crude Black and Red Ware at the lowest level at Somnath, and of painted Black and Red Ware at level 1B of Rozdi as well as from three sites in the Ghelo valley of Bhavnagar district⁷. The direction of dispersal is, therefore, from north to south; from Rozdi and other sites of its kind in the vicinity towards Somnath. The Ghelo valley Black and Red Ware provides a link between Lothal and Rozdi.

Being, however, a region of relative isolation, where, once an impulse enters, it nucleates around a limited area and stagnates till another impact inductively rouses it from its cultural torpor, the impact was first produced by the Harappan culture around the 2nd half of the 2nd millennium B. C., and it evolved in various stages, indicated by archaeologists as Lothal A-B, Rangpur II a-b and Rozdi A-B and in the transmuted form of Lustrous Red Ware as at Rangpur IIC-III and Rozdi-C and Somnath II. Then, the Black and Red Ware, a few centuries later and in its painted stage (from about 1900 B.C. to c. 1200 B.C.) produced the subsidiary impact, continuing, mainly in its non-painted later phase, for another half a millennium (approximately from 6th-7th Cent. B. C. to 1st Cent. B. C.). The chalcolithic Black and Red Ware co-existed with both Harappan and late Harappan (as at Amra, Lakhabaval and Rozdi) and the Prabhas Ware (coeval with the latter). The gap between the surmised duration of painted Black and Red Ware (chalcolithic) and plain Black and Red Ware (Iron Age) was dominated by the Lustrous Red Ware as mentioned above, and the urge to use painted pottery continued even in the post-chalcolithic phase, as in the sites yielding 'Vasai Ware' referred to earlier. This ware was mainly extant in northern coastal Saurashtra, while the Madhya Saurashtra and southeastern and southern areas were the zones of sway of the plain Black and Red Ware. Alternately, we have in some sites mainly in an early chalcolithic

6. Indian Archaeology-A Review, 1955 56 p. 7 and 1956 57 pp. 16-17

7. Indian Archaeology—A Review—1960-61 pp. 7-8

occupation and a large cultural break almost upto the opening centuries of our era. Again, in the prechristian centuries B. C., the Indo-Scythian and Indo-Parthian hordes⁸, and the Roman tradesman-like the authors of Periplus to whom, as to Ptolemy, the land was well known as Syras-trene—who, together, brought about the ceramic evolution of the Red Polished Ware, and who were the first to spread their political sway over well nigh the whole of Saurashtra. Being an essentially foreign element, they were clever enough not to clash with the inland forces, but made profitable and dignified peace with the Imperial Mauryas and the Guptas who had been maintaining defensive and civilian control of these remote borders of their empire, and this continued almost upto the 6th Cent. A. D., until the first truly local and independent dynasty of the Maitrkas rose in the southeastern part of Saurashtra centred around Valabhipur. Art, architecture, maritime trade (under their triumphant bull banner) and administration were at the acme of their progress and magnitude. But the inevitable cycle of historic process again prevented their fanning out too wide into the mainland Gujarat despite their partial sway over the coastal Gujarat belt, and they were again destined to recede into the Saurashtran zone, only disintegrate and invite the last most important maritime foreign thrust, namely, that of the Arab Muslims, who despite having stumbled and been discomfited many a time starting from the time of Rashtrakuta Amoghavarsha (Balhara Raja of the Arab Historian Suleiman) persisted with considerable tenacity, and could ultimately, after the glorious Siddharaja Solanki's reign came to a close, plant themselves firmly around the Cambay gulf. But the Islamic sultanate proper was not achieved without the initial spade work and demoralising power of the Imperial Delhi Sultans of the Tughlaq dynasty, who maintained their Governors in Gujarat, after whom the local muslims of Saurashtra and mainland Gujarat came to their own and established the independent Gujarat Sultanate dynasty under Sultan Ahmad Shah's grand-father, Zafarkhan.

The final chapter of the story of the cultural impacts on Gujarat-Saurashtra is also not without an element of significance. While the maritime buccaneering foreign expeditions from the Portuguese could barely get footholds at Diu-Daman, etc. around the Cambay gulf, the main overmastering impact came from the British who were the historic successors to the Imperial Moghal seat of power at Delhi and this again proved that, he who ruled Delhi came to rule the whole Indian landmass, by sheer force of historic rhythm.

8. Dr. B. A. Saletore—The Main current in the ancient History of Gujarat, M. S. university of Baroda, 1960

To revert to the corresponding career of the Gujarat mainland, however, we note that it had a Palaeolithic period, as so thoroughly explored and revealed in the Sabarmati⁹ and Mahi¹⁰ valleys, but it does not appear to have had a very rich Middle Stone Age, although there was clear human occupation and continuity of activity even then, as shown by the only known Middle Stone Age site, just near Kapadvanj on the Mohor river, discovered by the writer¹¹. The reason for the lack of more such sites may be two fold namely (a) that the whole country from Baroda to the southern tip of Aravallis (known as the Taranga Hills) is covered by a deep mantle of alluvial loam and lodss, under which much is lying hidden and (b) that there was relatively less copious supply of the siliceous materials required for the Middle Stone Age tools (also called Series II) in Gujarat, unlike Saurashtra where it is found as an associative element of the trap country. Microlithic sites of pre-chalcolithic character are, however, found in plenty as at Langhnaj and elsewhere¹² and these grade later by stages with the chalcolithic microliths.

In the chalcolithic period and after, we have in Gujarat¹³, not only the overflowing and lingering vestiges of Harappa culture current¹⁴ as at Mehgarh, Telod, and Bhagatrao, in the Narmada and Kim estuaries respectively, but also sites like Andhi and Warthan yielding vestiges of the Central Indian Black-on-Red Ware group. It may, however, be stated that it is mainly the Black and Red Ware, painted at an earlier stage and unpainted a later and mainly of the Iron Age Stage, that brought for the first time, a cultural homogeneity to Gujarat and Saurashtra since we find it, approximately from 7th 6th Cent. B. C. onwards in all

9 H D Sankalia—Report of 4th Gujarat Prehistoric expedition—Maharaja Pratapsimha Rajyabhisheka Granthamala Series—1944

10 B Subba Rao—Archaeological exploration in the Mahi Nalley—Journal of M. S. University of Baroda—Vol. I, 1952

11. K. V Soundara Rajan—Middle Stone Age sites from Kaira District in Gujarat—Journal of Oriental Institute Baroda, Vol. X, No 2, Dec. 1960

12 Sankalia H D.—Investigations into the Prehistoric Archaeology of Gujarat, Baroda 1945, Also B Subba Rao, op. cit.

13 The main Harappan sites of Lothal and Rargpur are dealt with, in this article, integral with Saurashtra, for purposes of the data concerning their origin and diffusion, detailed herein.

14. Indian Archaeology—A Review—1957-58, 1961-1962

parts of Gujarat and Saurashtra (although the incidence is less in Northern Saurashtra, already noted). Correspondingly, it is seen that there are very few sites of N. B. P. in Saurashtra although the mainland Gujarat has yielded N. B. P. at many sites in the 1st Cent. B. C. levels as at Broach, Timberva, etc. It is notable, however, that this Black and Red Ware culture also ceased to exist with the coming into being of the Red Polished Ware in early historic time of our era.

We had already referred to the fact that the Saurashtra Harappan would represent in itself slightly subsequent phase to its period of occurrence at Mohenjo-Daro etc. in Sind valley proper, and the term 'Sub-Indus' has been applied by some archaeologists like Wheeler for this¹⁵. We have also noted that in Saurashtra we have at least two phases of Harappan and one phase of transitional post Harappan, (signified by the Lustrous Red Ware) two cultures contemporary to Harappan itself, called the 'Prabhas Ware' and the chalcolithic Black and Red Ware. The actual temporal sequence of impact and diffusion of these raises many difficulties, presumably due to the present paucity of data. We have vestiges of the 'Prabhas Ware' obtaining, scrappily though, at the far off Central Indian Malwa Ware centres like Navda-Toli, in its third phase from below (datable around the end of the 2nd Millenium B. C.) At the same place, painted Black and Red Ware was found at the lowest level dated there on C-14 basis, to around the middle of the 2nd millenium B.C.¹⁶. If we could work back with these data it would yield the following position:

The earliest in the chalcolithic series would be the Harappan as represented at Lothal (A) and Rangpur (2A) As between these two, the sum total of evidence would seem to be in favour of making the former the earlier settlement. This had taken place around the very beginning of the 2nd millenium B. C. The Harappan culture was associated with Black and Red Ware at Lothal but did not have this association at Rangpur. In any event, it gives a date equivalent to the Harappan of Lothal, for earliest the Black and Red Ware (painted) of Gujarat-Saurashtra. We have then the late Harappan phase which has correspondence with Lothal-B, Rangpur 2B, Lakhavai I and Rozdi 1A and B. Despite their commonness of culture, it would be noted that degeneration and new trends are already setting in. Besides, with Rozdi I A-B coeval with Somnath 1B (on the basis of the 'Prabhas Ware' correspondence).

15. Wheeler R. E. M.—Indus Civilization Supplement to the Cambridge History of India; Early India & Pakistan

16. Sankalia & Subba Rao, op. cit.

it is apparent that it had taken its Black and Red Ware element also from Rozdi to Somnath, as an attendant community index.

We have then the Lustrous Red Ware phase (Rangpur 2C, spilling into Rangpur III) which is post-Harappan and by the aforementioned argument, post-Somnath I as well. It is available at Somnath itself in Somnath II. This culture, despite its sporadic occurrence over many sites in Saurashtra and even rarely in upper Deccan (as for instance at Bahal) was only the dragging along of Chalcolithic black painted pottery over red slip, as a hang-over of the Harappan technological impulses, but did not have any special vitality and was clearly operating in a vacuum. As culture abhors a vacuum, the subsequent phase saw partial diffusion of the Rangmahal-based Vasai Ware in northern Saurashtra and the comprehensive diffusion of the plain Black and Red Ware over the whole of Gujarat and best part of Saurashtra, as already detailed, giving it, its first homogeneous matrix. Thus while Black and Red Ware in its earlier stages was fated to have a purely auxiliary and merely contemporary role with other decidedly dominant chalcolithic cultures, its trend came around the last quarter of 1st millennium B. C. when Lustrous Red was itself and the 'Vasai Ware' types became effete holding no promise of further rejuvenation, and it then played the dominant role itself.

We thus note on the whole, the developmental tendencies oscillating between Gujarat mainland and Saurashtra alternately producing intermittent gaps in culture-assimilation and degeneration and was controlled in this by the geography and favoured physiographic environments. This dichotomy in the cultural vicissitudes of the archaeology of Gujarat-Saurashtra would be apparent if the Time-event chart and the map appended (Figs. 1 and 2) are studied.

The time-event chart attached is obviously not the complete picture of the relative progress of Saurashtra and Gujarat mainland, but is perhaps a good approximation based on the present data, giving us the bold outlines of cultural motivation in these two regions of Gujarat. Likewise the map is intended mainly to present a visual picture of the main culture currents that had their impact on and in-roads into Gujarat-Saurashtra and had moulded its proto-historic, cultural heritage.

POTTER'S TECHNIQUE THROUGH THE AGES OF GUJARAT

Syt. Ambalal J. Patel, Baroda

(Summary)

In this paper, the technique of potter from Neolithic to present day is discussed with a view to study the various processes and the gradual development. Its survival presents an important problem for Archaeologists to distinguish the early pottery from recent fragments of pottery. The potter's technique is almost the same all over India, but this paper is based on the study of various potter's forty centres personally contacted in Gujarat. It is a humble attempt to trace the technique from dawn of civilization, and how he prepared his earliest contrivances from various natural materials such as vegetables, fruits for storing water and grain. But these were inadequate for settled life to meet this new challenge. He tried to make vessels of clay and followed thus up by inventing pottery.

In the beginning he employed various methods for making pots such as hand made, basket lining and the coiled methods etc. But then shaping of pottery was enormously facilitated by the invention of wheel. Earliest pottery appeared in Jeriche in Palastine in the valley of Jordan and in India found at Lānghanaĳ, Nāgārĳunkunda and Bīrbhānpur. But wheel was masterfully used at Harappa and Mohenjo-daro.

The Study of old and present pottery revealed that all the pots are functionally suitable. The complete critical study of the modern forms and excavated forms show that the forms are essentially the same from early times.

The growth of ceramics industry as craft and art are prevented by social, religious and geographical factors. Domestic pottery though strictly utilitarian, does not mean that the pots are devoid of artistic decoration, painting etc. Potters were acquainted with pigments and various methods of kilns firing such as open kiln, closed kiln and firing under inverted position etc.

AN INTERESTING STONE IMAGE FROM JHINJHUVADA

Syt. J. M. Nanavati, Rajkot

Jhinjhuvada is situated at a distance of about 21 miles north of Kharaghoda in Surendranagar District of Gujarat State. The ruined massive fort walls with their lavishly decorated ancient gateways are betoken of its antiquity at least as far back as the Solankī period. The typical plastic art of the age is sumptuously represented by these superb gates which besides those at Dabhoi are second to none in India in its category. During the early months of the current year while clearing the eastern Rakṣāgate, a hoard of seven huge images of goddesses turned up by the left side where once a shrine harbouring the same possibly existed. All images are of equal height (4' 9") and width (2') and depth (1' 9"). The hands with the attributes of the five images are thoroughly mutilated and the sixth only preserves only one hand. The seventh one alone is practically intact and is described in this paper.

The goddess is seated in *lalitāsana* with a *nara* or *śava* vehicle supporting her right foot. She holds fish-in-a-leaf, *khadga*, *khappara* (?), a large oblong and beautifully decorated *khetaka* of a very rare kind. She is fully decked with ornaments including a bejewelled *karaṇḍa-mukuta* of a very fine workmanship. Her squarish face typical of the twelfth century is still well formed and radiates the last glow of serenity. Her massive breasts daintily support the long *hṛnamālā* which though conventional, is still prettily wrought out. The ethic type and the mannerisms of carving of this images are characteristically of the first half of 12th century as the comparison of this one with the figures in the mighty pillars of Rudramahālaya clearly show. Traditionally, the fort is ascribed to Siddharāja Jayasīma, a circumstantial evidence that supports the above date for the image under reference.

Apart from its aesthetic appeal, the interest in this image is central around its peculiar iconographic aspect. The identification of the image offers some difficulty inasmuch as none of the known texts on iconography seems to enjoin such a form for a female deity. If the fish-in-a-leaf in her lower right hand is ignored for a moment the remaining attributes together with the specific vehicle would point out this image as probably the Śakti of Dīkṣā Nīrti. Some sort of support is lent by the remaining images of the goddesses where the vehicles such as elephant, ram and bull, preserved for three of them are respectively symptomatic the *lokapālas* such as Indra, Agni, and Isāna in the order. Perhaps this image reflects a variant of the iconography of Nīrtibhāryā which normally could have been.

ANTIQUITIES FROM DASARATH, TALUKA BARODA, DISTRICT BARODA

Dr. R. N. Mehta, Baroda

It was reported in the local Newspaper 'Lokasattā' of 26th March, 1962 that bricks weighing about 17 kilograms (35 lbs.) were obtained at Dasarath, a small village about 8 kilometers to the north of Baroda. The village was explored on 11th and 27th April. During the first visit the author was assisted by his student Shri Batuk Majmudar and on the second occasion he was helped by Shri Maganbhai Desai.

To the west of Dasarath runs the National highway No. 8. Near the Mile stone 64/4 is a local pond that is on the west of Dasarath. On the western bank of this pond is a small temple of Navadurgā, the local cremation ground and the Navadurgā Tobacco Company.

The present Navadurgā temple is a recent temple built on a small platform 4.75 meters x 5.79 meters. The temple has only two parts the Antarāla and the Garbha-gṛha and has three offsets, (the Bhadra, Pratiratha and the Kārṇa) and the simple mouldings, the Kumbha, Kalaśa, Janghā, Kevala and Chadya¹. The roof is covered by domes built on squinches.

Close observations around this temple reveals the following stratigraphy on the S. W. side. There is a country road at this point. From this road surface at the height of about 1.60 meters is seen the remains of a brick structure. The structure is built of bricks of 43.2 x 27.9 x 8.3 cms. and mud mortar. Nine courses of this structure are noted².

In the Navadurgā temple fifteen images are lying. These images can be subdivided in three main groups :

I Early group,

II Late Group,

III Indeterminate

1. This is in accordance with the instructions in the Śilpa Śāstras which mention that for building a temple at low cost the Śrāvattī, Udgama, Māñci and forms on Janghā should not be made. These forms raise the price considerably. cf. Śilparatnākara III, 92.

शिवावटपुद्गमौ माम्नी चंपारूपाणि वर्जयेत् ।

अल्पद्रव्ये महत्पुण्यं कथितं विद्वत्समा ॥

2. Such brick construction is seen at Karvan, Baroda, Devni mori, Shamalsaji, Vadnagar, Kamrej, Junagadh and other sites in Gujarat. It is also prevalent upto this day in villages, and the old structures in cities often show this construction. This practice of historic period comes at least from Chalcolithic period in India, and it relies on the available local material.

The first group is represented by the images of Bhairavā, Śiva, Kaumārī, Maheśvarī, Brahmānī, Andrī, Chāmundā, Vārāhī and Ganeśa (9).

The second group is represented by two Ambikā figures, one Mahisamardini, Hanumān and Bhāthijī (5).

The last group is represented by a solitary fragment of the lower part of a Ganapati figure (1).

The first group is made of sandstone, and is about 62.3 cms. x 35 cms. in size. All the figures are in standing position and beautifully carved. Their dress is simple, they wear few ornaments and have good expression. All these figures have simple halos, and do not show any signs of Māñcī, Udgama or pillars on the side.

The second group is of marble. It is smaller in size. It was enshrined in this temple about a decade ago.³ This group was made in Baroda by the sculptors living in the Patthargate area.

The third group is also of sandstone, but as it is a fragment, nothing more could be noted about it.

The details about the images of the first group are as follows :

Ganapati (61 cms x 35.5 cms) is a four armed standing figure with a Danta (?) in the lower right hand, Parśu in the upper right hand, Padma in the upper left hand and Kundikā of sweet-balls in the lower left hand. A Nāga yajñopavīta and a garland. The Ears of the God are decorated with lotus buds and is dressed in short dhotī. His Vāhāna, the mouse is shown jumping. This figure is in tribhāṅga and has realistic features.

Bhairavā (70.35 cms x 30.5 cms) is partly repaired nude figure with Jaṭāmukuta. He carries an indistinct object and sword in right hands and a Kapālā and Naramuṇḍa in left hands. The dog licks the blood dripping from the Naramuṇḍa.

Śiva (69 cms x 35.2 cms) is a pleasing figure with Jaṭāmukuta, Ekāvalī and beautiful Kuṇḍalas and armlets. It is dressed in simple dhotī. The figure carries Viṇā in the lower left and right hands. The upper right hand carries a Trisūla while the upper left has an indistinct object repaired at a later date. This may be a Nāga. Śiva stands in front of his Vāhāna the bull that is eating something from a manger.

Kaumārī (68 cms x 33 cms) is identified by her peacock Vāhāna. Her heavy chignon is tied with a band. She puts on heavy ear-rings and kankaṣas on wrists and waist band of single string. She carries an indistinct object in her upper right hand while the lower has a sword or a Kunta (?). The left hands carry a Kukkuṭa and lotus.

³ Information kindly supplied by, Shri Pragjibhai Patel, an old devotee of Mother Goddess.

Mahesvari (70 cms x 35.2 cms) carries a Trisūla in one of the right hands whereas the other is Abhayamudrā. The left hands a Nāga and a Citron. She wears Jaṭāmukuṭa, heavy Kundalas, waist string and stand in front of her Vāhana the bull that is eating something from a manger.

Brahmānī (68 cms x 38 cms) is identified by her three faces and Hāṃsa Vāhana. Her head is decorated with Jaṭāmukuṭa and puts on Kankanas, Ear-rings and waist band. She carries a Sruva in the upper right hand and the lower right is in Abhayamudrā. In her left hands she carries a Book and a Kamaṇḍalu.

Aindri (66 cms x 35.5 cms) stands in front of her Vāhana, the elephant. She carries an Aṅkuśa in her upper right hand whereas the other right is in Abhayamudrā. In the upper left hand she carries a Vajra and in the lower left is Citron. She wears Karaṇḍa mukuṭa and ornaments similar to those wore by other goddesses.

Cāmundā (66 cms x 35.5 cms) wears Jaṭāmukuṭa and Kuṇḍalas. She has a garland of skulls, Necklace of Nāga, and wears a short dhoti. She puts on Kaṅkanas and other ornaments. She has pendent breasts but is neither nude nor depicted as a skeleton. She carries a Khatvāṅga and Khaḍga in the right hands and Kapāla and Naramuṇḍa in the left hands. A dog stands to her left & licks the blood from the Naramuṇḍa. She stands on the corpse.

Vārāhi (70 cms x 35.5 cms) looks up with her damaged snout facing left. She wears a dhoti reaching the ankle. She carries a Gadā in the upper right hand and the lower right is skimbo. In the left hands are the Cakra and Śankha. Her Vāhana looks like a Varāha facing downwards and eating something out of a manger. Eventhough Aparājita-prcchā 223.16 notes her Vāhana as Mahiṣa, this animal does not look like it.

This group of figures has close affinity with similar figures from Baroda and Karvan. The Gaṇeśa could be compared with that from Shamalaji and the stylistic similarity may be useful in suggesting a date for them. It is very clear from the stylistic study that these figures have no affinity with the Chaulūkyan sculptures seen on numerous monuments. These figures as noted above have stylistic features similar to those that are ascribed to a period from 6th to 8th century A. D. If this comparison is considered for chronology the Dasarathi group belongs to the period of 6th to 8th century A. D. All these figures were painted and the remains of red, yellow and white were seen. The red was on the forehead. Cheeks, arms, hair-dress Yellow is seen on the headdress and white in the eye balls. After cleaning them with Teepol the colours were seen clearly.

To-day these images are not in their proper stratigraphic context. While digging for a new mandapa old bricks were found. This discovery supports the stratigraphic observations noted above.

The stratigraphic study reveals that at the site of Navadurgā temple, there was a brick structure of an earlier date, but is it possible to decide its date? Probably excavation here may give some clue to arrive at the date, but without it one has to consider the available evidence.

The stratigraphy points out to the fact that brick structure was the earliest one at this site. The brick-size from this site can be compared to that seen at Baroda, Devni mori, Junagadh, Vadnagar and other sites in Gujarat. At the other sites these belong to the early centuries of Christian Era, and could be dated to about 4th century A. D. at the latest.

These two lines of evidences suggest a gap in our information which requires to be filled up by future work.

The name of this Navadurgā temple itself requires some consideration. The temple does not house nine Durgās and hence the name is unjustified. The images suggest that it is a temple of Saptamātrkās. Today only Vaisnavī is missing from this group. It may be noted that the worship of Saptamātrkās was very popular in western India in the pre-Chaulukyan period. The images of Saptamātrkās are found at Vadnagar, Abu, Arasura, Shamalaji, Juna Deesa, Chapra and other sites. These groups are assigned to a period of about 6th to 9th centuries A. D. At Ellora also a similar group is noted. The images at Dasarath belong to the Saptamātrkā group and not to the Navadurgā group which has another iconographic characteristics.

It is an interesting change in the nomenclature of this temple as it is named as Navadurgā. Historically this worship is comparatively late, and the name itself shows confused thinking and bad observation.

Only justification of this name rests on the fact that there were nine images both of Gods and Goddesses existing at this site. These nine figures might have been considered as the Goddesses and this would account for the name. But this explanation would raise the question whether male Gods were dubbed as Goddesses? The answer to this question is positive as it is observed at Vav (Dist. Surat) that an image of Brahmā is worshipped as a Goddess. At Tarsali (Dist. Baroda) Sūrya is worshipped as a Goddess. Such instances could be multiplied. This supports the view that at Dasarath also all the figures were considered as goddesses and the temple was named as 'Navadurgā temple', probably after the Navadurgā worship became popular.

Besides this place old sculptures of Śiva-Pārvatī, Mahiṣāsuramardīnī, and Viṣṇu are seen in the temples in the village. In the centre of the village is the architectural moulding of kumbha. The sculptures are pre-Chaulukyan on stylistic grounds, but the stone moulding is certainly late.

The Mahiṣamardīnī figure (84 cms x 48.26 cms) has Triśūla and Khaḍga in the upper and lower right hands and the upper left hand carries the bell, whereas the lower left has caught the face of the bull. This image has heavy coats of Vermillion so other ornamental details are not available. Similar figure from Salad is seen in Baroda Museum, but the difference in the Mahiṣa is clear. In Salad the human form of the demon has come out, but in this figure the demon is a simple buffalo. In this feature it could be classified into the variety showing only the buffalo. This is the earlier tradition as such figures are seen at Mathura, Pattadakal, Bhuvanewara and other sites.

The Śiva-Pārvatī figure is a fragment. Śiva has Triśūla in the right hand, Nāga in the left hand, with other left hand he embraces Pārvatī who carries a lotus in her left hand and with her right she embraces Śiva. The coiffeur and ornaments of Pārvatī links her up with the Cāmaradhārīnī and smaller figures of Yakṣī Ambikā of Akota Hoard. The figure may be ascribed to about 8th-9th century A. D.

Another early sculpture is the Viṣṇu with Mālā, Gaḍā, Cakra and Śaṅkha in the right and left hands. There are Āyudha puruṣas with the figure. Viṣṇu is dressed in simple loin cloth and has simple halo.

As the village itself seem to stand on the old site, as can be gathered from the uneven surface, observation of some cuttings, one cannot trace its history by excavations, but the following outline of the history of the village is based on the cumulative evidence of the antiquities available so far.

The village seem to be inhabited at least from the first millenium A. D. The early inhabitants of this village built brick temples dedicated to Mother Goddesses. They worshipped the Saptamātṛkās in the Middle and the later part of the 1st millenium A. D. The wide spread worship of this group is suggested by the discovery of similar images from Shamalaji, Vadnagar, Abu, Old Deesa, Bileswara, Pota, Boricha, Shrinagar, Karvan and other sites in Gujarat.

Besides the worship of Saptamātṛkās, the local population worshipped Śiva-Pārvatī, Mahiṣāsuramardīnī and Viṣṇu in the later part of the 1st millenium A. D. In the 2nd millenium A. D. the village continued to exist. A stone 'kumbha' suggests the existence of some

stone temple and a few images suggest that Śaivism was fairly strong in this place.

Thus the village Desarath is an old village (about 1600 years old) which preserves the ancient important archaeological relics. Careful observation here may some day reveal other useful relics.

THE BUDDHIST MONUMENTS AT DEVANI MORI

Syt. S. N Chowdhary, Baroda

Gujarat has ushered into a new epoch of her archaeology and art-history by revealing a beautifully embellished massive Stūpa and Vihāra in her north-eastern hilly region. This discovery is the latest outcome of a systematic scheme of explorations and excavations carried under the auspices of the Department of Archaeology and Ancient History, The Maharaja Sayajirao University of Baroda.

These monuments are discovered near a Vaiṣṇava pilgrimage centre-Shamalaji—well known among scholars for its wealth of green schist sculptures belonging to early historic period. Hence during the course of exploration of North-Gujarat as part of his Ph. D. thesis it became imperative for the present writer to explore Shamalaji area. Some of the sculptures mentioned above were reported to have been collected from the vicinity of Devni mori about half a mile to the east of Shamalaji. Therefore area around Devni mori was also examined. A low square mound with a depression in the centre and a lofty conical mound—both formed on some brick structures—were identical in surrounding landscape. On examining their sections the tapering mound seemed to be a solid structure. The square mound also seemed to be formed on some square structure. The close proximity of such typical structures hinted at a Stūpa and a monastery. Moreover the surrounding area was also strewn with brickbats and potsherds. The brick-measurement ($16''$ to $17''$ x $10\frac{1}{2}''$ to $11''$ x $2\frac{1}{2}''$) of these structures corresponded to Kṣatrapa Period brick-measurements from Baroda, Akota and Vadanagar. So it was assumed that this site was probably a Buddhist settlement belonging to early centuries of Christian Era. But as no definite direct chronological evidence was available it was decided to settle the problem by a systematic archaeological excavation. Therefore excavations at Devni mori were started subsequently in February, 1959. Since then three seasons spadework upto February 1962 has revealed very interesting results.

The result was the discovery of a massive burnt brick Stūpa embellished with terracottas of Buddha, Chaitya arches, medallions and friezes of various decorations. Besides, remains of a Vihāra, an apsidal ended temple, votive Stūpas and a square structure were also exposed.

Devni mori, (Taluka Bhiloda, District Sabarkantha) is a small village situated on the eastern bank of river Meshvo about 80 miles north-east of Ahmedabad. Geographically this site is located on the border area of the north-eastern hilly belt of Gujarat which separates coastal plain of Gujarat from the Malwa plateau and Rajasthan.

Shamalaji and Devni mori are separated by a ridge of low hills running north-south. The only approach way between these two sites is through a gorge. The river Meshvo flowing north-south merges through the gorge and enters Gujarat. The Stūpa & the Vihāra are situated on eastern bank just upstream from the gorge. The village Devni mori is to the east of the monuments.

Shamalaji is situated on a strategic position controlling the trade-routes linking north India and the ports on the Arabian Sea (Brigukaccha) (Broach) and Stambhatirtha (Cambay). Hence it is quite possible that it might have absorbed many trends of art and architecture from north and north-western India right from the early centuries of Christian Era. It is well known that Buddhist monuments and monastic settlements are generally located near some highways or beautiful natural resorts frequented by people. The Buddhist monuments of Devni mori are no exception

STŪPA

The Stūpa is a solid structure of burnt bricks and mud mortar. It is square at base. Due to its height and tapering shape it has suffered much from nature. But against erosion and weathering of centuries it still stands 37 feet. Its base platform is still intact except its decorative frieze in relief. The upper portion of platform II and the surmounting drum are highly damaged.

As it stands today it can be divided into four main parts :

- | | |
|-------------------------|----------------|
| (1) Foundation and base | (2) Platform I |
| (3) Platform II | (4) Drum |

FOUNDATION AND BASE

As the structure is a solid structure only, about 8" foundation trench is laid. It is rammed with pebbles and brickbats to produce an even surface, on which is raised platform I.

PLATFORM I

Platform I measures 86' x 86' from corner to corner. Each of its sides is divided into eleven bays by twelve pilasters in relief. The corner pilasters are common for adjoining sides. Thus totally there are 44 pilasters.

Each pilaster is composed of plain moulded base, shaft and capital. The base and the shaft are devoid of any ornamentation except low projections and recesses. But the main focus of attraction is the beautifully carved Indo-Corinthian capital. It is adorned with conventional compositions of Acanthus-leaves patterns. These capitals protrude about 8" from the wall and support a broad decorative frieze in relief running all along the platform top. This frieze is composed of three bands in a string-course. the lowest is in chequer pattern the middle one is typical sprouting Acanthus-leaves composition, and the top one of consoles or brackets. The top corner of the platform is rollmoulded in perfect curvature. And finally the top surface is paved with well burnt bricks.

PLATFORM II

Platform II measures 70' x 70'. As stated above the upper portion of this platform is highly damaged. Still about 5' of its base is still intact. Its thick rollmoulding of about 1'-6" thickness and string course projections and recessed surmounted by pilaster bases are still in situ. Hence the original height and the decorative scheme of this platform can be reconstructed from other evidences only.

While digging off one quarter portion of the drum circular courses continued upto 51st course i.e 15' to 16'. Under this the bricks were laid in straight courses in headers and stretchers bonding suggesting an angular plan. Hence it can rightly be inferred that platform II rose up to this height. Platform II is 8' high (including foundation) and the dilapidated drum at present is 15' to 16'. So if we subtract these two heights (8' plus 15' = 23') from the total height of 37', the height of platform II comes to about 14' to 15'. So it can be assumed that platform II was 14' to 15' high.

As top of platform I was most probably utilised as circumbulatory path all the four sides of platform II were studded with Buddha images. The whole decorative scheme of this platform was planned around these images. Though this exceptionally broad panel has collapsed it is not so difficult to reconstruct it. The images, arches, medallions, pilasters and decorative bricks were found lying on top of platform I clearly indicating that they had collapsed from platform II.

Measurements and shapes of decorative terracottas clearly indicate that each Buddha image in Dhyānamudrā was flanked by pilasters in relief and surmounted by typical Chaitya arches fretted with elaborate floral and geometric compositions carved in relief. The pilasters were most probably same like pilasters on platform I, but had probably more

height. The bases, shafts and capitals were same except few alterations in decorative patterns.

DRUM

The drum is highly damaged. It is fifty two feet in diameter. But its shape has to be conjectured only. Although the circular alignment of brickcourse above platform II clearly suggests that it was at least circular in plan. Most probably like 'tower's of Stūpas from Mirpurkhas, Mirrukhan, Sudheran and Jarak in Sind this drum was also fairly elongated hemispherical. Like platform I and platform II it also might have been adorned with some decorative bands.

The surmounting "*Harmikā*" and "*Chatravalli*" are missing.

The original height of this drum cannot be conjectured with certainty. But if we can rely upon a terracotta plaque depicting a Stūpa flanked by two Bodhisattvas (?) it might have been 21' to 25' high.

The Stūpas at Mirpurkhas, Thul Mirrukhan, Jarak and Sudheran in Sind are the closest allies of Devni mori Stūpa. But they differ in shape, size, plan and decorative scheme. Yet, decorative patterns are same. Their layout differs. The following dimensions table will also be interesting:—

Name of Stūpa	Platform measure- ments	Height	Platform Nos.	Drum
Devni mori	86' × 86'	37' damaged	2	Elongated hemi- spherical
Mirpurkhas	53'-6" × 53'-6"	About 55'	1	Very elongated tower
Thul Mirrukhan (Lower platforms completely damaged)	66' × 66'	60'	1	Cylindrical tapering tower
Sudheran	(98'-6") × 76'-9"	—	Highly	damaged —
Jarak	85'-6" × 85'-6"	—	No details available.	

It will be marked that all the Sind Stūpas are having only one platform. Their drums or 'tower's are abnormally elongated to such an extent that they cannot be described as hemispherical but solid cylindrical and tapering. Most of them except Thul Mirrukhan are highly dilapidated. The decorative friezes of Thul Mirrukhan Stūpa are also missing, but what is left shows three bands of decorative pilasters in tiers one above the other; below these the surface of lower square platform is destroyed. Stūpas at Sudheran, Jarak and Deparghangro are having single square

platforms surmounted by high cylindrical drums. The Mīrpurkhas Stūpa is also of the same type, but major portion of its side walls of base platform is still intact. In plan it differs from Devnī morī Stūpa. The Mīrpurkhas Stūpa has a shrine room in its western side where it has a small antechamber with three niches in its three sides, probably for some images. Moreover this side is decorated with small friezes of human and animal figures in small panels. Each of the other three sides North, East and South had five niches arranged in the bays flanked by pilasters in relief. The three central niches had seated Buddha images in Dhyānamudrā while the end niches were filled with lattice decorations. Above these niches were arranged Chaitya arches. But unlike those at Devnī morī they are devoid of any decorative patterns.

Thus it will be clearly marked that Devnī morī Stūpa differed from the Sīnd Stūpas in following aspects :

- (1) Platform numbers
- (2) Shape of the drum
- (3) Layout of decorative patterns and scheme

But in spite of the differences there in the architectural features, the decorative patterns are almost same.

The other differences can be seen in the modelling details and finishing of the Buddha images. All Devnī morī images are in seated postures in Dhyānamudrā. At Mīrpurkhas the images from the main niches are in Dhyānamudrā while others on the votive tablets (supposed to be of later period) are in Bhūmisparśa and Dharmacakra Mudrās. There is some difference in seats also. Devnī morī images are seated on cushions lined with horizontal bands of lotus petals, while Mīrpurkhas images are seated on sprouting lotuses modelled almost in their realistic forms. Only one image, that having straight hair is seated on a cushion corresponding to that of Devnī morī. Some of the Mīrpurkhas images are seated on four legged stools also. Devnī morī images are finished with only one paint-cream. Mīrpurkhas images are painted elaborately-ropes in red, golden complexion and eyes hair in black.

There is difference in rendering of drapery also. Devnī morī group can be divided into two groups: (1) Having both shoulders covered, (2) Having only one shoulder covered. All Mīrpurkhas images have both shoulders covered. There is difference in rendering of folds and frills also. Devnī morī folds are depicted by single or double incised lines and ribbed lines. At Mīrpurkhas folds are depicted with incised lines only and that too not with much accuracy or details.

But the main difference is in the modelling of body proportions and the facial features. Devni mori group has clear and with proportionate features. At Mirpurkhas some of the images have bigger heads. Their rendering of feet and fingers is also not so perfect. Among Mirpurkhas images eyes of some of the images are fairly open while those of others are half closed. All Devni mori images have half closed eyes (Ardhamilita Netra).

Unlike Mirpurkhas group Devni mori group has no haloes or nim-buses. These haloes are alike in all images except one straight haired image where instead of a circular band of square and rounded lotuses it has a scroll band of conventional leaves.

Various compositions of decorative patterns such as chequer design, conventional Acanthus and Bay leaves pattern, and designs of lotus petals clearly indicate Greeko-Roman influence which came through Gandharan School during its last phase, when according to Marshall the form and decoration of Stūpas, both large and small had undergone radical changes. Their bases were split up into two or more receding terraces and these in turn were covered with lines of Buddha or Bodhi-sattva figures set in ornamental niches and divided one from other by stunted pilasters of debased Corinthian pattern.

According to him this demand of Buddha figures encouraged the use of clay and stucco in place of stone as it was now possible to cast or model the images or architectural embellishments and repeat them with least labour over the surface of a monument.

This art of clay modelling might have travelled through Punjab, Bhawalpur (Sue Monastery Stūpa) and then along the Indus course where we have a whole string of Stūpas at Mirpurkhas, Sudheran, Jarak and Deparghangro or through Rajasthan where we have sites like Badopal near Bikaner, which have the same decorative patterns arranged in a typical scheme. All these sites like Badopal in Bikaner show a highly developed terracotta art. The most significant feature is the association of Raṅgmahāl culture at all these sites. Mirpurkhas itself has Raṅgmahāl pottery and the Red Polished ware.

Though decorative patterns and the whole decorative scheme is corresponding to Gandharan school the Buddha images differ from the Gandharan figures. Gandharan images have mostly heavy chins, almost open eyes, typical wavy hair style and realistic drapery. Their bodies are also modelled on reality. Instead of smooth rounded curves of Indian tradition based on impressionism Gandharan figures have muscular bodies.

But Devnī morī images are modelled by blending these two traditions. The drapery style of some of the images (these have ridged folds) and hair style of one head (having wavy hair) have some tinge of Gandharan style. But the smooth Indian styled facial features (such as thick lower lip etc.) hint at the Mathura School.

In short, the artists who created these remarkable terracotta images were gifted not only with technical talents adopted from the West, but they were also endowed with such a natural instinct due to which they were able to enlighten their creations with vitality of expression coupled with spirituality which anticipated the best efforts of Gupta Age.

In short, the decorative patterns and their layout of Devnī morī Stūpa which belongs to Phase I is of typical late Gandharan order while the images which belong to Phase II have almost lost their Greek tinge. Devnī morī images bear the expression of incarnating spirit, dignified composure and compassion.

Stylistically these images fit in very well with those classified by Harald Ingholt as Group III which bear more Indian tinge in their modelling and finish. He puts them in about fourth century. As stated above Marshall also thinks that burnt-brick Stūpas adorned with terracotta reliefs were erected during the last phase of Gandharan School.

CHRONOLOGY

The phases of the Vihāra and the Stūpa have been very carefully correlated. During the first phase the Stūpa seems to have been a beautifully embellished structure with images having wavy hair style. The second phase both at the Vihāra and the Stūpa—is a phase of great aesthetic activity when elaborate mouldings and images were repaired or replaced. Most of the decorative fragments belong to this second phase. The chronology of the structures depends mainly on Numismatic evidence. The second phase of the Vihāra can be very well dated with a hoard of coins which includes coins of Ksatrapa rulers, the latest being that of Svāmī Rudrasena, (Śaka-270-300 i.e. A.D. 348 to 378). On the basis of this the second phase to which most of the present images belong should be dated to the second half of the 4th century. The third phase is that of repairs and two coins of Bhatārka show the probable age—end of the 5th and the beginning of the 6th century.

LINGUISTIC SECTION REPORT

આ વિભાગનું કાર્ય તા. ૨૦ મી ઑક્ટોબરને દિવસે ઇતિહાસ અને પુરાતત્ત્વ વિભાગોની સાથે જ શરૂ થયું હતું, જેમાં ક્રમપ્રાપ્ત અધ્યક્ષીય ભાષણમાં ડૉ. અંબકલાલ દવેએ વરરુચિના 'પ્રાકૃતપ્રકાશ'માં સૂચિત છે તેને આધારે “ પ્રાકૃત ભાષાઓનો ભૌગોલિક પ્રસ્તાર ” નિરૂપ્યો હતો. વરરુચિએ 'પ્રાકૃતપ્રકાશ'માં મહારાષ્ટ્રી શૌરસેની માગધી અને પૈશાચી એ ચાર પ્રાકૃતોની મીમાંસા કરી છે. આ ચારે પ્રાકૃતોના સ્વરૂપની સ્પષ્ટતા કરી અધ્યક્ષશ્રીએ તે તે પ્રાકૃતના પ્રદેશો તારવી આપવાનો નોંધપાત્ર પ્રયત્ન આ વ્યાખ્યાનમાં સાદર કર્યો હતો.

ત્રણે વિભાગોના અધ્યક્ષોનાં વ્યાખ્યાન થયા પછી ત્રણે વિભાગો અલગ અલગ ખંડોમાં વિભક્ત થયા હતા, ત્યાં પછી નિયંધોનું વાચન અને એ ઉપર ચર્ચાઓ થઈ હતી.

ભાષાશાસ્ત્ર-વિભાગમાં નીચેના છ નિયંધો રજૂ થયા હતા :

- | | |
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| ૧. આદિવાસી ઉપભાષાઓ અને સંશોધન | ડૉ. જનાર્દન પંડ્યા |
| ૨. 'બ્રહ્મકાર'—સંગીતકાર | ડૉ. ભોગીલાલ જ. સાંડેસરા |
| ૩. સત્તરમી સદીના ભારતમાં બનેલા કાપડના કેટલાંક નામોની વ્યુત્પત્તિ | શ્રી. ભૂતપરામ દવે |
| ૪. ગુજરાતી ભાષામાં ઉચ્ચારણ-ચિહ્નની સમસ્યા | પ્રો. સુરેશ ત્રિવેદી |
| ૫. કંઠ્ય અથવા 'સ'કાર | પ્રો. કેશવરામ કા. શાસ્ત્રી |
| ૬. ઐતિહાસિક દૃષ્ટિએ પાશ્ચાત્ય ભાષાવિજ્ઞાન | શ્રી. શાંતિભાઈ આચાર્ય |

આમાંના ડૉ. ભોગીલાલ જ. સાંડેસરા હાજર રહી શક્યા નહોતા, બાકીના પાંચે નિયંધોનો સાર તે તે નિયંધકેષ્ઠે રજૂ કર્યો હતો.

ડૉ. જનાર્દન પંડ્યાએ આદિવાસી ઉપભાષાઓ અંગેના સંશોધન મંડળ તરફથી ગુજરાતના આદિવાસીઓની બોલીઓના અભ્યાસનું જે કાર્ય શરૂ કર્યું છે તેને અંગે સજીવ ચર્ચા કરી હતી, જેમાં સભ્યોએ સારો સહકાર આપ્યો હતો.

શ્રી. ભૂતપરામ દવેનો નિયંધ માહિતીને માટે ઉપયોગો જણાવ્યો હતો. એમાં વિદેશી વેપારીઓએ ભારતમાં પ્રચલિત નામો વિકૃત કરીને કેવી રીતે ઉપયોગમાં લીધાં હતાં એનો સારો એવો ખ્યાલ મળી શક્યો હતો.

પ્રો. સુરેશ ત્રિવેદીએ આપણને ગુજરાતી શબ્દોની જોડણીમાં મૂંઝવના ઉચ્ચારણ-વિષયક પ્રસંગોની મીમાંસા કરી હતી, જેમાં સંવૃત અને વિવૃત એ-ઓ, હચુતિ, અંત્ય પૂર્ણ સ્વર, શબ્દાંતે લઘુપ્રયત્ન અકાર, અનુનાસિક વ્યંજનો, અને સ્વરોની વ્યંજનો પછી માંડણી એ વિષયો ઉપર વક્તાએ પોતાના સ્પષ્ટ વિચાર રજૂ કર્યા હતા.

કે. ડા. શાસ્ત્રીએ ગુજરાત-સૌરાષ્ટ્ર-કચ્છમાં પ્રાયઃ સર્વત્ર વ્યાપક દકારની જાંતિ કરનારું સ્કારનું કંઠ્ય ઉચ્ચારણ ક્યા ક્યા સંજોગોમાં ઉચ્ચરિત થાય છે એ વિશેના પોતાના વિચાર રજૂ કર્યા હતા, અને આ ઉચ્ચારણ કેટલું પ્રાચીન છે એ તરફ ધ્યાન દોર્યું હતું.

શ્રી. શાંતિભાઈ આચાર્યે પાશ્ચાત્ય ભાષાવિજ્ઞાનની ઐતિહાસિક દૃષ્ટિએ જે મદદ છે તેનો પરિચય આપ્યો હતો. તે તે પ્રસંગે અધ્યક્ષશ્રીએ પોતાના અભિપ્રાય વ્યક્ત કરી ચર્ચાને સજીવ બનાવી હતી.

કે. ડા. શાસ્ત્રી

Sectional Presidential Address

GEOGRAPHICAL LAY-OUT-OF THE PRAKRIT DIALECTS:
INDICATIONS FROM VARARUCI

Dr T. N. Dave, Dwarka

ABBREVIATIONS:— S = Sanskrit, Ś = Śaurasenī; Mā = Māgadhi; P = Paisāci, M = Mahārāṣṭrī, V = Vararuci, the numerals before the dot refer to the number of the chapter and those after it, to the no. of the sūtra, e g. 8.24 = chapter 8, sūtra 54, and so on.

VARARUCI, the earliest prakrit grammarian treats only 4 principle prakrits, viz., the Mahārāṣṭrī, and Śaurasenī, the Māgadhi and the Paisāci in his work called Prākṛta Prakāśa. Of the 12 paricchedas or chapters which the work contains, the first 9 are devoted to the detailed treatment of the M deriving it directly from S, while the chapters 10, 11, 12 deal with P, Mā, and Ś respectively by atideśa¹ and by noting only those trails in which they differ from one another and from M.

At the beginning of the treatment of the last three dialects and at the end of Mā and Ś, the authour makes certain interesting remarks. They are —

- I prakṛtiḥ samskr̥tam 12 2 for Ś.
- II prakṛtiḥ Śaurasenī 10 2 and 11 2 for P and Mā respectively.
- III sesah samskr̥tāt 9.18 for M and
- IV. śeṣam mahārāṣṭrīvat 12 32 for Ś

(Note. These sūtras are translated in the footnote).

While explaining the sūtra 10.2 the commentator remarks sthitāyām śaurasenīyām paisācī-laksanam pravartayitavyam, i e., “the rules for P are to be applied *after* the Ś has been formulated.” He means the same thing with regard to the rules for Mā when he comments on the same sūtra repeated at 11.2, though he does not say so in so many words there. On 12.2 we have no help from the commentator as the commentary on the ch. 12 does not exist. It is however easy to understand the sūtra. It says that Sanskrit is the Prakṛti or the source from which Ś is to be derived directly. No such thing is mentioned for M though in fact it is M and not Ś that is actually derived from Sanskrit by our authour. At the end of the treatment of M he says by an atideśa sūtra that the

Notes: 1. Sanskrit is the source. 12.2, Śaurasenī is the source 10.2, 11.2. The remaining rules, etc. are to be known from Sanskrit 9.18; the remaining is like Mahārāṣṭrī 12.32.

remaining facts about M are identical with those of Ś, and by another atideśa sūtra 12.32 for Ś he says that the remaining facts about Ś are to be obtained in the same way as those of the M.

These remarks yield interesting conclusions and throw some light on the question of the geographical lay-out of the prakrit dialects during the time of Vararuci. Let us see. We assume for this purpose that the dialects treated by V represent a cross-section of the linguistic position in North India during our author's time, i.e., that V is describing the prakrit of his own time—a very legitimate and necessary assumption. This will simplify our work by eliminating the time-factor from our consideration leaving us free to concentrate on the geographical distribution of the dialects of the time, only.

The authour has conceived the M as an independent language deriving it directly from S. This is admissible in view of the fact that it had high literary position and poetic elegance at that time. Everyone is anxious to learn the lingua franca or a literary language first, however farther it may have been removed from the source language, viz. in this case Sanskrit. On the other hand, the other three dialects are conceived as closely related by ties of family relationship. Ś, for example, has S as its prakṛti or the source and is itself the source of P and Mā. It is true that a large part of the linguistic material treated under M is common to all the Prakrits as will be seen from the author, a remark śeṣam mahārāṣṭrīvat 12.32 (for the translation, please, see the footnote). But from the details given in the last three chapters in which the dialects are said to differ from one another, it is clear that Ś is the conservative dialect nearest to S in sound-changes and grammatical forms. It therefore occupied the central area where the linguistic traditions and habits of S were most powerful. This area extended from, say, Vārāṇasī in the east to the Arabian sea in the west covering the whole of Gujarat, Rajasthan, and south of Sind. While on its two sides, the east and the north-west, were the Māgadhī (as the name implies) and the Pāṣāṇī respectively. The last two could not lie side-by-side with each other, because they differed too widely and had too many mutually incompatible traits to enable them to do so. And as south was covered by the M (as its name indicates), there is no alternative except to assume that north-west was the area for the P. The author has recognised this by (1) stating that S is the direct source of Ś while P and Mā were connected with S only indirectly through Ś; (2) describing the mutually conflicting traits of Mā and P in chapters 10 and 11. Let us take a few of those traits:—

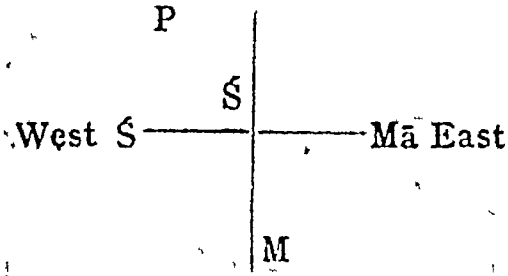
Serial No.	Sanskrit	Śaurasenī	Māgadhi	Paiśācī	Mahārāṣṭrī
1.	ś, ṣ, s	s	ś	s	s
2.	-t-, -th-, -d-, -dh-	-d-, -dh-	-d-, -dh-	-t-, -th-	zero and -h-
3.	n, n	n	n	n	n
4.	j-, -j-, y-, -y-	j- and -y- or zero	j- and -y- or zero	y-, -y-	j-, and zero
5.	r	r	l	r	r
6.	Consonant cluster e. g. dy, etc	-jj-	-jj-	-cc-	-jj-
7.	astī	acchadī	acchadī	acchatī	āhai
8.	-tvā-	-īa	-dūnam	-tūnam	-tūna

Take a few examples. S madana (god of love), P. matana; Mā. madana, Ś madana, M. mayana or maana. There are two tendencies noticeable here with regard to the intervocalic -d-. They are (a) devoicing, i. e., the changing of the voiced -d- into unvoiced -t-, (b) changing of the stop to a spirant and ultimately to zero. The former process is called hardening while the latter is softening. They are mutually incompatible and cannot exist in the same or in the immediately neighbouring areas. But if there is an intermediate area where -d- remains as -d- and -t- is changed to -d- (not to zero) the dialect with -d- changing to -t- and the dialect changing it to y or to zero can accommodate themselves on either side of the dialect retaining -d-, i. e. if Ś assumes the central role, the Mā and the P can lie on its two sides. The case of n, n is still more interesting. Mā changes the S n to n and keeps S n unchanged; the P, on the other hand, changes S n to n and keeps S n unchanged. How can these two mutually conflicting tendencies exist in the same or the immediately neighbouring languages? A central language is absolutely necessary to keep away the conflict. Thus P can exist in the north-west of Ś only. Even south does not properly fit in with it.

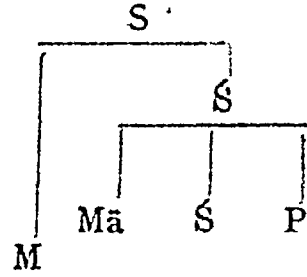
Regarding the M, a quickly changing dialect, it is fair to say it is far removed linguistically from S than Ś. But our author has given it a special importance by deriving it directly from S on the ground that it was the most important language of the time. But later on the author has taken care to transfer by an atideśa to the other three dialects, those of its traits which were shared by them. The rapid sound-changes and quick grammatical substitutions peculiar to M leave no doubt about the fact that it was removed considerably from the centre in the south (as its name suggests). The author has indicated even this by keeping it aloof and not granting it the status of family relationship as he has done in case of the other three.

The final result of the above discussion may be summed up in the following two diagrams :-

(1)
GEOGRAPHICAL LAY-OUT
NORTH



(2)
RELATIONSHIP WITH SANSKRIT



આદિવાસી ઉપભાષાઓ અને સંશોધન

ડૉ. જનાર્દન પંડ્યા, મુંબઈ

જીવસૃષ્ટિમાં માનવ સર્વોત્તમ છે. અજ્ઞાન અવસ્થામાં માણસ પાસે વાંચા હતી, પણ બોલી કે ભાષા નહોતી. આદિ કાળમાં માનવ ધ્વનિ દ્વારા કે સંજ્ઞા દ્વારા પોતાની લાગણી કે ઇચ્છા વ્યક્ત કરતાં હતાં, એ “આઉ-આઉ,” “પૂહ-પૂહ,” “ડિંગ-ડોંગ” અને “યો-હો-યો” theories ઉપરથી સમજી શકાય છે. આજે પણ ગામડાંઓમાં બળદ, ગાય કે બકરાં વગેરે પ્રાણીઓને ધ્વનિ દ્વારા બોલાવવામાં કે ચલાવવામાં આવે છે. આ ઉપરથી એટલું તો સ્પષ્ટ છે કે વિશ્વમાં પહેલી ઉત્પત્તિ ‘ધ્વનિ’ની થઈ.

આદિ સમયમાં માનવ જૂથમાં એક જંગલમાંથી બીજા જંગલમાં, એક સ્થળમાંથી બીજા સ્થળમાં ફરતો અને એક જૂથ બીજા જૂથના સંપર્કમાં આવતું. આમ આ કાળમાં માનવનો સ્થાયી વસવાટ નહોતો. આ સમયમાં માનવને પોતાની ઇચ્છા કે લાગણી વ્યક્ત કરવામાં મૂંઝવેણ પડતી. સમય જતાં જેમ જેમ માનવને એકબીજાનો સંપર્ક વધ્યો તેમ તેમ પોતાની ઇચ્છા-લાગણીને વ્યક્ત કરવાનું સાધન એ શોધતો રહ્યો તેમજ પોતાની જરૂરિયાતની ચીજ બનાવતો થયો. આપણી પ્રાગ-ઈતિહાસિક ઓઝરસામગ્રીઓ, જરૂરિયાતની વસ્તુઓ કે બીજા હતર અવશેષો આના પુરાવા છે. માણસ એ કાળમાં પોતાની લાગણી પથ્થરો કે લાકડાંઓમાં કાતરણી કરી દર્શાવતો હતો જે આપણને મળતી ચીજો ઉપરથી જોઈ શકાય છે. પોતાની હિચ્છિત વસ્તુને પ્રાપ્ત કરવા દેવ દેવીઓની તેમજ બ્રૂતપિશાચની આરાધના માણસ કરતો. આપણને પ્રાપ્ત થતી દેવ-દેવીઓની મૂર્તિઓ કે આકૃતિઓ આના પ્રતીકરૂપ છે. આમ આકૃતિ બનાવતો માનવ પોતાના સ્વજનોને સંબોધવા માટે કંઈક નામો આપતો થયો. ગ્રિયર્સને એમના Linguistic Survey of India, Vol. ૬, પા. ૩ માં આ Kin-ship શબ્દોના નમૂના આપ્યા છે. દા. ત. ‘આપને’ આદિ બનતિઓના સેકા “અમાસ” ઠી સંબોધના. વળી છોકરાને “પુતાસ” જેવા શબ્દોથી બોલાવના. પછી ધારે ધારે ભાંચા તુટ્યા શબ્દોમાં પોતાના વિચારો માનવ દર્શાવતો થયો જે દ્વારા આદિ માનવ બનતિની બોલીઓની રચના થઈ.

આજે જે ભારતીય આર્ય બોલીઓ છે તે પ્રાચીન આર્ય ભાષાના ક્રમિક વિભાજનનું પરિણામ છે. ગુજરાતી, મારવાડી, મેવાતી, માળવી, જયપુરી, બીલી અને આવી ખીણ બોલીઓ પણ મુખ્ય પ્રાચીન આર્ય ભાષાના ક્રમિક વિભાજનથી અસ્તિત્વમાં આવી છે. આ બોલીઓનું પણ ક્રમિક વિભાજન થયું છે. અને આ વિભાજન પછીથી જ ગુજરાતી ભાષા તરીકે દરજ્જે મેળવે છે. જુદી પડ્યા પછી એ સ્વતંત્ર રીતે વિકસે છે અને પછી આગળ જતાં એનું બોલી-ઓમાં વિભાજન થાય છે; જેવી કે મુરતી બોલી, સૌરાષ્ટ્રી બોલી, ચરેતરી બોલી વગેરે.^૧ આ બોલીઓની ચર્ચા કરવા કરતાં બીલ-બીલોડી-નામે ઓળખાવેલી આદિવાસીઓની બોલીનું સંશોધન વિશેષ જરૂરી છે, જે આદિવાસીઓ રાજપુતાના અને અરવલ્લીની ખીણમાં તેમજ રાજપીપળા, પંચમહાલ-સાબરકાંઠા, તાપી નદીની આબુખાબુમાં રહે છે.

આપણા પુરાતત્ત્વવેત્તાઓએ આદિ માનવજાતિનાં સંસ્કૃતિ, વિસ્તાર, રીત-રિવાજ, વસ્તુઓ માટે સંશોધન કર્યું છે અને આજે પણ એ કરી રહ્યા છે, પણ એ લોકોની-અને એમાં આદિવાસીઓની બોલીનો પહેલો વિચાર કરનાર ગ્રિયર્સન જ હતા. ગ્રિયર્સને એમના Linguistic Survey of India, Vol. IX, -Part 3 માં બીલી-બીલોડી ભાષાઓના શીર્ષક નીચે નાયકડી, ચૌધરી, ઘોંડિયા, ધાણકા, મારવાડી-મેવાતી બોલીઓના નમૂના આપી ચર્ચા કરી છે. કેટલાક શાબ્દિક ઉચ્ચારો ચિહ્નો દ્વારા બતાવી એ બોલીઓનો તફાવત તેમજ એનું સામ્ય પણ એમણે બતાવ્યું છે. વળી હિંદી-મરાઠીના સંપર્કમાં આવેલી જાતિઓની બોલી ઉપર જે એ ભાષાઓની અસર થઈ તે પણ એમણે એ પુસ્તકમાં નમૂના આપી બતાવવાનો પ્રયત્ન કર્યો છે. આ તો ૫૦ વરસ ઉપરની વાત થઈ. આ આદિવાસી જાતિઓની બોલીઓમાં આજે શો તફાવત પડ્યો, એમાં શો વિકાસ થયો એનું સંશોધન હજી બાકી છે. પૂનાના ભાંડારકર ઇન્સ્ટિટ્યૂટમાં, વડોદરા યુનિવર્સિટીના પ્રાચ્ય સંશોધન વિભાગમાં તેમજ ગુજરાત સંશોધન મંડળમાં આદિવાસીઓના સંશોધનની શરૂઆત થઈ છે. ભાંડારકર ઇન્સ્ટિટ્યૂટે આદિવાસી લોકોની ભાષા-બોલીનાં સંશોધનનો પ્રશ્ન હલ કર્યો છે, પણ ગુજરાતમાં આદિવાસી બોલીના સંશોધનની હજી પ્રાથમિક અવસ્થા જ છે. આ પ્રશ્નનો વિચાર ડૉ. ટી. એન. દેવેએ “The Language of Maha Gujarat” પુસ્તિકા ગુજરાત સંશોધન દ્વારા પ્રકાશ પામી છે તેમાં કર્યો છે એ પુસ્તિકામાં ભાષા કે બોલીના સંશોધન માટે આવશ્યક ભૂમિકાનો તેમજ ગુજરાતી ભાષાના પ્રાદેશિક-વિભાગનો વધારે પ્રમાણમાં વિચાર કરાયો છે. શ્રી પોપટલાલ શાહે “હૂબળા” તેમજ “નાયક-નાયકડા” એ પુસ્તકમાં નાયકડા જાતિની સંશોધનાત્મક વિચારણા કરી છે અને એમાં એ જાતિની બોલીનો વિસ્તાર તેમજ ગ્રિયર્સનના સમયની અને આજના સમયની એ જાતિની બોલીમાં શો ફરક પડ્યો છે એ નમૂના આપી બતાવવાનો પ્રયત્ન કર્યો છે, પણ એ દ્વારા આ જાતિઓની બોલીઓના આખરી સ્વરૂપના સિદ્ધાન્ત પ્રતિપાદન થઈ શકતા નથી એ માટે જોઈતું field work પૂરેપૂરું પ્રાપ્ત થયું નથી. તર્કથી બોલી કે ભાષાના સ્વરૂપની રેખા સ્પષ્ટ થાય છે, પણ સંશોધનની દૃષ્ટિએ વૈજ્ઞાનિક ચોક્કસાઈ વગર બોલી કે ભાષાનું વિકસિત માળખું કે એનું સ્વરૂપ બાંધી શકાતું નથી આ વિચારની વિસ્તૃત ચર્ચા, સંશોધન રીતિનું માળખું તૈયાર કરવાની પદ્ધતિનું પરિશીલન આવશ્યક છે. દા. ત.

૧. જુઓ- ભાષા અને એની બોલીઓ-ડૉ. પ્રબોવ પાંડિતનો-૫૮, ૨૯૧ થી ૨૯૮ સુધીનો લેખ :- ‘ગુજરાત-એક પરિચય’માં.

૪. સ. ૧૯૦૭ માં ગ્રિયર્સને નાયકડી ભાષાના નમૂનામાં 'માણસ' શબ્દને માટે "માનહ" "મનખ" "માનસાદે" જેવા શબ્દો આપેલા છે. આજે એ જ જાતિની બોલીમાં 'માણસ' શબ્દ માટે "માણહ" શબ્દ વપરાયો છે, પણ ઈ. સ. ૧૯૦૭ અને આજના સમયની વચ્ચે 'માણસ' માટે "માણસ" કે "માણહ" કે બીજો શબ્દ વપરાયો એનું વૈજ્ઞાનિક રીતે સંશોધન કરવાનું બાકી રહે છે. અને આ માટે એ જાતિઓ જે જે સ્થળે છે તે તે સ્થળે એમની વચ્ચે રહી કાર્ય કરવું જરૂરી છે, કારણ કે એકલા તર્કના આધારે અનુમાનો બાંધી શકાય નહિ.

આજે મહારાષ્ટ્ર-ગુજરાતની સીમાઓ ઉપર કે રાજસ્થાન-ગુજરાતની સીમાઓ ઉપર જે આદિવાસી જાતિઓ રહે છે તેમની બોલીનું સ્વરૂપ કેવા પ્રકારનું છે તેમજ એ બોલીઓ ઉપર બીજી કઈ કઈ જાતિઓની બોલી કે ભાષાની અસર થઈ એ સંશોધન બાકી છે. ગ્રિયર્સને આપેલા નમૂનાઓ બતાવી જાય છે કે આદિવાસી-ભીલ-ભીલોડી ભાષાઓમાં મરાઠી-હિંદી ભાષાના શબ્દો આવી ગયા છે દા. ત. 'વેંચી' શબ્દ માટે મુરત જિલ્લાની નાયકડી બોલીમાં 'વાટી' 'વાઠી' જેવા શબ્દો વપરાયા છે. આવી બીજી આદિવાસી જાતિઓની બોલીમાં પણ શબ્દોની આયાત થઈ હશે. આજે ગ્રિયર્સના સમયથી-પચાસ વર્ષના સમય દરમ્યાન આદિવાસી બોલીઓ ઉપર બીજી ભાષાની કે બોલીની શી અસર થઈ એનું સંશોધન ઘણું જરૂરનું છે.

ગ્રિયર્સને આદિવાસી ભાષાઓ કે બોલીઓનો વિચાર કર્યો, પણ એમાં સંદાન્ટિક કે વૈજ્ઞાનિક ચોક્કસાઈ કેટલી, એ માટે કેવા પ્રકારનું field work જરૂરી છે, એ વિચારવાનું રહે છે.

આદિવાસી જાતિઓના રીતરિવાજો-વાતાવરણ, સ્થળ તેમજ કાળે આ જાતિઓ ઉપર તેમજ એમની બોલીઓ ઉપર કેવા પ્રકારની અસર કરી એનો પણ અભ્યાસ જરૂરી છે.

ભાષા કે બોલીના સંશોધનમાં તર્ક (Logic) ને સ્થાન તો ખરું, પણ વૈજ્ઞાનિક ચોક્કસાઈ સાથે Logical conclusions-અનુમાનો બંધાય એ સંશોધન માટે આવશ્યક છે. આ માટે ધ્વનિ-ઉચ્ચારણ પરત્વે વધારે ભાર મૂકવો જોઈએ. બોલી કે ભાષાનાં ઉચ્ચારણો પ્રાપ્ત કરતાં જાતિઓ પોતાના વિચારવિનિમય કે પોતાના રોજિંદા વ્યવહારમાં ક્યા શબ્દો વાપરે છે તેમ એઓ શબ્દોનો ઉચ્ચાર કેવો કરે છે એની સ્પષ્ટ નોંધ કરવી જરૂરી છે. આ માટે recording machinesની જરૂર રહે છે.

શ્રી. પોપટરાવ શાહ—Philology in Gujarat and N. B. Divetia—સંશોધન મંડળના ત્રિમાસિકમાં ઇ. સ. ૧૯૫૬ ના ઓક્ટોબરમાં પ્રસિદ્ધ યથેચ્છ લેખમાં લખે છે : "It is unfortunate that philologists begin the study at the last stage, leaving behind the study of the evolution of the language at the tribal and pretribal stage to the anthropologists." પણ એમનું મુખ્ય છે કે "Linguistic survey of tribes should be given priority as they are fast disappearing." એમણે આ માટે ભાર મૂકતાં કહ્યું કે "One more reason why I emphasise the study of tribal dialects, is to discover the presanskrit elements in the speech of these tribes before their sanskritisation took place." આ આદિવાસી જાતિઓની બોલીઓના સંશોધનમાં એ જાતિ.

ઝોની ઝોલીઓમાં જે જે શબ્દો જે મૂળ રૂપે વપરાયા છે તેનું collection કરવું પહેલું જરૂરી છે અને actual phonetic transcription માટે trained phonetics or phonemics recording machine પણ જરૂરી છે, જેથી જુદી જુદી ઝોલીઓમાં આવતા ઉચ્ચારોનો તફાવત માલૂમ પડે. આ માટે ઝોલામાં ઝોલા છ મહિનાનું field work દરેક આદિવાસી ઝોલીના સંશોધન માટે જરૂરી છે. આ સૂચનો શ્રી. પોપટલાલ શાહે પૂનામાં ભરાયેલી Linguistic Conference માં કર્યાં હતાં. આ સૂચનોમાં હું પણ સહમત થાઉં છું, કારણ મારું માનવું છે કે જે શુદ્ધ ભાષા તરીકે ગુજરાતી, રાજસ્થાની, હિંદી કે મરાઠી ભાષાને આપણે સ્વીકારીએ છીએ તેનાં આદિ મૂળ તો આદિવાસીઓની ભાષામાં જ રહેલાં છે. દરેક આદિવાસી ઝોલીનું આમ તો સ્વતંત્ર સ્વરૂપ છે, પણ એકબીજાના સંપર્કથી કેટલાક શબ્દો સામાન્ય બન્યા છે આ conferenceને સમયે મારી તો નમ્ર વિનંતિ છે કે આદિવાસી મૂળ ઝોલીઓ લુપ્ત પામે તે પહેલાં એનું સંશોધન થાય. આ કામ મોટી સંસ્થાઓ કે વિશ્વવિદ્યાલયો જ કરી શકે છે, કારણ કે આધુનિક યંત્રો એઓ જ મેળવી શકે. ગુજરાતના બધાં વિશ્વવિદ્યાલયો પોતાના એમ એ. અને Ph. D ના અભ્યાસક્રમમાં આદિવાસીઓની ઝોલીનું સંશોધન શરૂ કરે તો વૈજ્ઞાનિક સંશોધન રીતિએ આ ઝોલીઓનું સંશોધન થાય અને લુપ્ત થતી એ ઝોલીઓનું સ્વતંત્ર સ્વરૂપ સચવાય

‘વઙ્કાર’—સંગીતકાર

ડૉ. ભોગીલાલ જ. સાંડેસરા, વડોદરા

(સારાંશ)

વઙ્કાર શબ્દ સંસ્કૃત કે ગુજરાતીના કોઈ શબ્દકોશમાં નથી, પણ મધ્યકાલમાં ગુજરાતમાં રચાયેલા સંસ્કૃત ગ્રંથોમાં તથા જૂના ગુજરાતી સાહિત્યમાં એ પ્રયોજાયેલો છે. એનો અર્થ ‘સંગીતકાર’ એવો થાય છે એમ પ્રાપ્ત પ્રમાણોને આધારે બતાવ્યું છે. વળી વઙ્કાર શબ્દની વિવિધ અર્થઘટનાઓની ચર્ચા આ નિબંધમાં કરવામાં આવી છે તથા વાચનાત્માર્થ સુધાકલશકૃત નૃત્ય-સંગીતશાસ્ત્રના સંસ્કૃત ગ્રંથ ‘સંગીતોપનિષત્ સારોદ્ધાર’ (સં. ૧૪૦૬)ને આધારે વઙ્કાર અને ગન્ધર્વના લક્ષણોની ચર્ચા પણ અપાઈ છે. પ્રાચીન ગુર્જર દેશની લોકભાષામાંથી આ શબ્દ સંસ્કૃતમાં લેવાયો છે એમ સ્પષ્ટ જણાય છે. વઙ્કારમાંનો -કાર કર્તૃવાચક સંસ્કૃત પ્રત્યય છે, પણ વઙ્કનું નિર્વાચન મુશ્કેલ છે. સંગીતાદિનો વાચક એ કોઈ દેશ્ય શબ્દ હશે, જેનું મૂલ અત્યારે આપણને અજ્ઞાત છે

સત્તરમાં સદીમાં ભારતમાં બનેલાં કાપડનાં કેટલાંક નામોની

વ્યુત્પત્તિ

શ્રી. ભૂપતરામ વ. દવે, અમદાવાદ

(સારાંશ)

ભારત કાપડના ઉત્પાદન માટે અને એની નિકાશ માટે આર્યો હિંદમાં વસ્યા ત્યારથી પ્રસિદ્ધ છે. વૈદિક સાહિત્યમાં કાપડની બનાવટ તથા રેશમી અને બિનના કાપડનાં સુંદર વર્ણન છે. ઋગ્વેદના દસમા મંડલમાં એક ઋચા છે. એનો અર્થ એમ છે કે “સત્તર બનાવો, એના

પર રંગ ચડાવો, એને જળવીને વણો. તમે વિચારશીલ બનો અને મુખ્ય નિર્માણ કરો, અને તેજસ્વી પુરુષોએ બતાવેલા માર્ગનું રક્ષણ કરો.” આમ જીવનની બે મુખ્ય જરૂરિયાતો અન્ન અને ખીજ વસ્તુનું મહત્ત્વ આપણે જોયું. એક નોંધપાત્ર વસ્તુ છે કે વૈદિક કાળમાં કપાસની શોધ થઈ ન હતી.

સત્તરમી સદીમાં ગુજરાતના દરિયાકિનારાનાં શહેરો ગુરત, લણ, ખંભાત વગેરેથી કાપડની નિકાશ યુરોપ, આફ્રિકા અને એશિયામાં થતી હતી. એ નિકાશ દેશી વેપારીઓ તેમજ પરદેશી વેપારીઓ કરતા હતા. એ સમયે યુરોપીય વેપારીઓએ અને એમાં ખાસ કરીને અંગ્રેજ વેપારીઓએ કાપડની જાતો માટે જે નામો રાખ્યા હતાં તેમાંનાં કેટલાંકની વ્યુત્પત્તિ શોધવાનો આ નમ્ર પ્રયાસ છે.

આ શબ્દો જે કાપડને માટે યોજાયા હતા તે કાપડ એકલા ગુજરાતમાં નહિ પરંતુ સિંધ, ઉત્તર હિંદ, બંગાળ અને દક્ષિણના મહારાષ્ટ્ર અને મલખાર કિનારાના પ્રદેશોમાંથી ગુજરાતનાં બંદરો દ્વારા નિકાશ થતું હતું, એટલે પરદેશી વેપારીઓએ ગમે તે રીતે અર્થ કરી નામો આપેલાં હશે એમ લાગે છે. લગભગ સુડતાણીસ શબ્દો માટે પ્રયત્ન કરવામાં આવ્યો છે.

મૂળ નામ આ પ્રમાણે છે. એનો અર્થ, એની વ્યુત્પત્તિ, એનું વર્ણન, ઉત્પત્તિસ્થાન વગેરે બૃહદ લેખમાં જોઈશું.

- (1) Adputtaes or Udputtaes. (2) Alacha or Alhlejah (3) Ardeas.
- (4) Baftas (5) Brawles. (6) Buttanees. (7) Byrams. (8) Cannikens.
- (9) Capperees. (10) Carolees. (11) Chelloes (12) Chirans. (13) Chautars.
- (14) Chuckerees. (15) Camboolees. (16) Culgars. (17) Cuttanees.
- (18) Deriabads (19) Dungarees. (20) Dutties. (21) Eckbaries.
- (22) Goaconcheriell. (23) Gunny or Guinea Stuffs. (24) Guldars.
- (25) Guzzees. (26) Hussanees. (27) Joories (28) Keeses.
- (29) Keryabads. (30) Meanaes. (31) Mentasses. (32) Mercuoles.
- (33) Muttfoons. (34) Megamepauts (35) Nickanees. (36) Patolas.
- (37) Pautkas. (38) Pitcharies. (39) Popules. (40) Saboons. (41) Sahabees,
- (42) Sallowes. (43) Semianoës. (44) Semibaffs (45) Seryas.
- (46) Shash. (47) Tapseeas

ઉપર જણાવેલાં નામોની વ્યુત્પત્તિ તપાસતાં એનાં મૂળ ભારતીય ભાષાઓના જન્મસ્થાન સંસ્કૃત ઉપરાંત ખીજ ભાષાઓમાં પણ છે.

આ નામો વિદ્યોટરિયા-આલ્ગર્ટ મ્યુઝિયમ-લંડન તરફથી આવેલા દક્ષિણ ટેક્સટાઈલ મ્યુઝિયમનાં મુખ્ય સંચાલક શ્રીમતી ગિરામહેન સારાભાઈ ઉપર મોકલવામાં આવ્યાં હતાં. એમણે અને એ કામ સોંપ્યું હતું.

ઉપરનાં નામોની વ્યુત્પત્તિ અને એનું સ્વરૂપ તપાસવા માટે સંસ્કૃત, ગુજરાતી, હિંદી, ફારસી શબ્દોનો આશ્રય લીધો છે. ઉપરાંત અંગ્રેજી Hobson Jobson. શબ્દોચ્ચ અને Influence of Portuguese Vocables In Asiatic Languages, Gaikwad's Oriental Series Vol. No LXXIV. By Mont Sebastino Rudolf Delyado જાણનાં આવ્યાં છે.

ગુજરાતી ભાષામાં ઉચ્ચારચિહ્નોની આવશ્યકતા

શ્રી. સુરેશ આર. ત્રિવેદી, વલ્લભ વિધાનગર

આપણે આપણી ભાષાની જોડણી તેમજ ઉચ્ચાર પરત્વે જોઈએ તેટલું ધ્યાન નથી આપતા એ એક નક્કર હકીકત છે. ખીજી ભાષાઓ પર પ્રભુત્વ ધરાવીએ છીએ, પણ સ્વભાષા તરફ દુર્લક્ષ સેવીએ છીએ. તાજેતરમાં જ હ મી ઓકટોબર 'ફરના' સંદેશ 'માં પ્રા. જશવંત શેખડીવાળાએ રેડિયો પર આવતા ખોટા ઉચ્ચારો વિશે ધ્યાન દોર્યું હતું. જોડણી તરફ થોડું ધ્યાન આપતા થયા છીએ, પણ ઉચ્ચાર તરફ પૂરતું ધ્યાન અપાતું નથી એનાં કારણો ઘણાં છે. જો કે ભારતની ઘણીખરી ભાષાઓ સંસ્કૃતમાંથી જન્મી હોવાને કારણે એમાં ઉચ્ચાર અને લેખનમાં વધુ સુસંગતતા અને વૈજ્ઞાનિકતા છે, ખીજી પરદેશી ભાષાઓને મુકાબલે આપણી ભાષામાં ઉચ્ચાર અને લેખન વચ્ચેની વિસંગતતા ઘણી જ ઓછી છે, પરંતુ હજુય આપણે આપણા ઉચ્ચારને વધુ ને વધુ વૈજ્ઞાનિક સ્વરૂપ આપવાની જરૂર છે.

અહીં આપણે એ જોવાનો પ્રયત્ન કરીશું કે આવી ઉચ્ચાર સંબંધી વિસંગતિઓ ક્યાં ક્યાં થાય છે, કેમ થાય છે, એને દૂર કરવા ઉપાય શા છે.

(૧) સંવૃત અને વિવૃત 'એકાર' :- સ્વરના ઉચ્ચાર-દૃષ્ટિએ ચાર ભેદ છે : સંવૃત (સાંકડો), અર્ધસંવૃત (ઓછો સાંકડો), વિવૃત (પહોળો), અર્ધવિવૃત (ઓછો પહોળો). ઘણુખરું આપણે સંવૃત અને વિવૃત 'એકાર'નો ઉચ્ચાર યરાયર કરતાં નથી યોગ્ય શિક્ષકના અભાવે કે દેશ્ય પ્રભાવને કારણે નાનપણથી જ આપણે ખોટા ઉચ્ચારો કરવા ટેવાઈ જઈએ છીએ. અર્ધસંવૃત કે અર્ધવિવૃત સ્વરની તો વાત જ જવા દઈએ, સંવૃત અને વિવૃતના ઉચ્ચાર પણ ખોટા કરીએ છીએ. ફેરી અને ફેરી અથવા ફેડીમાં પ્રથમ કે નો ઉચ્ચાર વિવૃત અને બીજા એ 'કે'નો ઉચ્ચાર સંવૃત છે તેવી જ રીતે 'શેરી'માં 'શે'નો ઉચ્ચાર સંવૃત છે અને 'કેટલોગ'માં 'કે'નો ઉચ્ચાર વિવૃત છે. અને 'કેટલાક'માં 'કે'નો ઉચ્ચાર સંવૃત છે આ ઉચ્ચારની સ્પષ્ટતા માટે વિશેષ ચિહ્નની જરૂર છે. મારે મને ~ ચિહ્ન યરાયર છે. ફેરી' લખતી વખતે ~ ચિહ્ન થી જ વિવૃત ઉચ્ચાર ધ્વનિત થાય અને 'ફેરી' વખતે એ ચિહ્નને સ્થાને માત્ર એક માત્રાનો જ ઉપયોગ થવો જોઈએ.

(૨) સંવૃત અને વિવૃત 'ઓકાર' :- એવી જ રીતે 'ઓકાર'ના ઉચ્ચારણમાં પણ સ્પષ્ટતા આવશ્યક છે. ગોળ અને ગોળ અને લખાય છે તો 'ગોળ' પણ. એક ઉચ્ચાર સંવૃત છે અને બીજો વિવૃત છે. સંવૃત ઉચ્ચારવાળો 'ગોળ' વર્તુળનો વાચક છે જ્યારે વિવૃત ઉચ્ચારવાળો 'ગોળ' એક મીઠો પદાર્થ સૂચવે છે એવી જ રીતે કોડી, કોડું, માં પ્રથમ 'કો' સંવૃત છે તો બીજો 'કો' વિવૃત છે. કોતર કોટર કોમલ વગેરેમાં 'કો' સંવૃત છે, જ્યારે કોલેજ, કોર્ટ, કોલસા વગેરેમાં વિવૃત છે. આમ સંવૃત અને વિવૃત ઉચ્ચારનો ભેદ સ્પષ્ટ સૂચવવા અંગ્રેજી શબ્દોના ગુજરાતી લેખનમાં આપણે જે ~ પ્રકારનું ચિહ્ન વાપરીએ છીએ, જેમકે-કોલેજ, તે વાપરવું જરૂરી છે.

(૩) હ્રસ્વતિનો લોપ :- ત્રીજી વાત જે વિચારવા યોગ્ય છે તે એ કે આપણે કેટલાક શબ્દોમાંથી હ્રસ્વતિનો લોપ ઉચ્ચારણમાં અને ક્યાંક લેખનમાં પણ, કરી નાખ્યો છે. દા. ત.

જ્યહાં, ત્યહાં, જહેમ, હેમ, હેમણે, હેમણે વગેરે શબ્દોને આપણે જ્યાં, ત્યાં, જેમ, તેમ, એમણે, તેમણે લખીએ તેમજ બોલીએ છીએ. ખરી રીતે 'તેમણે'ના 'તે' અને 'તેર'ના 'તે'નો ઉચ્ચાર એકસરખો નથી. એવી જ રીતે 'પહેરાવ્યું'માંના 'હ'નો લોપ કરી કેટલાક પેરાવ્યું લખે તેમજ બોલે છે. આ માટે એક ચોક્કસ ચિહ્નની જરૂર છે. અને એ માટે § ચિહ્ન વાપરવામાં આવે તો ઠીક થશે.

(૪) અંત્ય સ્વર :- ઘણી વાર આપણે જ્યાં અંત્ય સ્વર ઉચ્ચરિત ન થતો હોય કે અધૂરો ઉચ્ચરિત થતો હોય ત્યાં પૂરો ઉચ્ચારીએ છીએ અને જ્યાં ઉચ્ચરિત થવો જોઈએ ત્યાં ઉચ્ચાર કરતા નથી, જેમકે વદન, કમળ, મધુકર માં અંત્ય 'અ' અલ્પ અથવા અર્ધ ઉચ્ચરિત થાય છે, જ્યારે રામ, સુરેશ માં 'અ' પૂર્ણ ઉચ્ચરિત થાય છે. આ અગે / આ પ્રકારના ચિહ્નો ઉપયોગ થવો ઘટે; જેમકે સુરેશ'ના 'શ'નો ઉચ્ચાર પૂર્ણ થવો ઘટે

(૫) અનુનાસિક તેમજ અર્ધાનુનાસિક :- મોટા ભાગના લોકો આ અનુનાસિક અને અર્ધાનુનાસિક ઉચ્ચાર કરવામાં ગોટાળો કરે છે. ચંદ્ર, રંધ્ર, મંડપ, હંસ વગેરેમાં ૦ અનુનાસિક છે અને ખરું જોતાં એ ૦ ને જદલે ચંદ્ર, રંધ્ર, મંડપ, હંસ લખવા અને ઉચ્ચારવા જોઈએ. ૦ = ઙ્ મ્ છ્ ન્ મ્ ૦ ને જદલે વ્યંજનનો જ ઉપયોગ થવો જોઈએ. હંસ ન લખતાં હંસ લખાવું જોઈએ. 'મંડપ'ના 'મ'નો ઉચ્ચાર 'માંડવો'માંના 'માં' કરતાં જુદો છે. એવી જ રીતે 'કંદો' અને 'કાંદ'માં ઉચ્ચાર જુદો છે. ગંદ્રમાંના 'મં' અને માંદગીમાંના 'માં' માં પણ ઉચ્ચારદષ્ટિએ ઘણો ભેદ છે. રંડા, એરંડા વગેરેમાં 'રં'નો ઉચ્ચાર રાંડમાંના 'રાં' કરતાં જુદો જ છે. મતલબ કે-ચંદ્ર, રંધ્ર, કંદો, મંદ્ર, મંડપ, ચંપા, હંસ, રંડા, એરંડો વગેરેમાં '૦' એ પૂર્ણ અનુનાસિક વ્યંજન છે, જ્યારે ચાંદ, રાંધ, કાંદ, માંદગી, રાંડ, ક્યાં, હારી, ખાંસી, ટાંસી વગેરેમાં '૦'નો ઉચ્ચાર પૂર્ણ અનુસ્વાર નથી. આ ઉચ્ચારભેદ સ્પષ્ટ કરવા માટે | ચિહ્ન વપરાવું અનુકૂળ થઈ પડશે.

જો કે પિંગળશાસ્ત્રે તો પોતાને અનુકૂળ લઘુ ગુરુ માટે અમુક ચિહ્ની કામ સરળ બનાવી લીધું છે, વ્યાકરણમાં પણ ઉદાત્ત અનુદાત્ત અને સ્વરિતના ભેદ માટે પહેલાં અમુક ચિહ્નોથી કામ લેવાતું હતું, અને કવિઓ તો આજે પણ પોતાને અનુકૂળ ચિહ્ન વાપરી લઘુ-ગુરુ દર્શાવે છે, પણ ઉચ્ચારશાસ્ત્ર-ભાષાશાસ્ત્રમાં આના વિશે સ્પષ્ટ ભેદ ચિહ્નની ઘણી જ આવશ્યકતા છે. આથી મુદ્રણની થોડીક તકલીફ વધશે ખરી, પણ તેથી ગુદ ઉચ્ચાર કરવાની દિશામાં સારો ફાયદો થશે. અંગ્રેજી શબ્દકોશમાં ઉચ્ચારભેદ સૂચવવા આવાં ચિહ્નો વપરાય છે. મારો આગ્રહ મેં સૂચવેલાં ચિહ્નો સ્વીકારવા માટે નથી, પણ અમુક ચોક્કસ ચિહ્નો નક્કી કરવા તરફ વિદ્વાન ભાષાશાસ્ત્રીઓનું ધ્યાન દોરવાની તક લઉં છું.

કંઠ્ય અધોપ સંકાર

કેશવરામ કા. શાસ્ત્રી, અમદાવાદ

આપણે જેને ગામળિયા બોલીનું ઉચ્ચારણ ગણી ઉપેક્ષિત કરીએ છીએ તે સંકારનું કંઠ્ય અધોપ ઉચ્ચારણ માત્ર ગામળિયા ઉચ્ચારણ નથી, પણ સૌરાષ્ટ્ર, દક્ષિણ ગુજરાત, ઉત્તર ગુજરાત, સરદહની વાગડી અને વિવિધ બાકી બોલીઓમાં ખૂબ જ વ્યાપકતા ધરાવે છે. સામાન્ય રીતે

શ-ષ-સ ત્રણે ઉષ્માક્ષરોને સ્થાને પ્રાકૃત ભૂમિકાથી ઊતરી આવેલો સ્કાર ઉપર બતાવેલા વિશાળ દેશ-ભાગોમાં શિષ્ટ-અશિષ્ટ સર્વે લોકોમાં અભાનતાથી કંઠ્ય અથોપ ઉચ્ચરિત થાય છે. લોકસાહિત્યને ગ્રંથસ્થ કરનારા સ્વ ઝવેરચંદ મેઘાણી જેવા વિદ્વાનો તેમજ નવલકથા-નવલિકા-નાટિકા-નાટકોમાં આવતા સંવાદોમાં ગ્રામીણ ઉચ્ચારણ બતાવવા એવા સ્કારને સ્થાને 'હ' લખવામાં આવતો હતો-આવે પણ છે એ ભુલાવુ ન જોઈએ કે હકાર તો કંઠ્ય ધોષ વર્ણ છે, જ્યારે આ સ્કાર કંઠ્ય અથોપ છે, અને દત્ત અથોપથી સ્પષ્ટ રીતે જુદો પડી આવે છે. વસ્તુસ્થિતિએ આ ત્રણે સ્વતંત્ર વર્ણ (phoneme) છે :

સ્કાર : દંત્ય અથોપ

સ્કાર : કંઠ્ય અથોપ

હકાર : કંઠ્ય ધોષ

ગ્રામીણ ગણુતા એ સ્કારની પાછળ લાંબી પરંપરા હોય એમ લાગે છે; ખેશક, આપણે એને લેખનમાં કયાંય નિહાળી શકતા નથી. દંત્ય સ્કારમાંથી કંઠ્ય હકાર મુધી જવામાં આ મધ્યવર્તી ઉચ્ચારણ છે એમ કહેવામાં આપણે કશું ખોટું કરતા નથી.

આ ઉચ્ચારણ વૈદિકી કે સંસ્કૃત ભાષામાં હોવા વિશે આપણે કશું જાણતા નથી; સ્ત્રો વિસર્ગ થવાનું માત્ર સામાન્ય છે અને એ આ ઉચ્ચારણની એક શક્યતાનો ખ્યાલ આપી જાય એમ છે, કારણ કે સૂમાંથી વિસર્ગ થવા માટે મધ્યવર્તી કંઠ્ય અથોપ ઉચ્ચારણની અનિવાર્યતા સ્વાભાવિક હોવા વિશે શકા કરી શકાય એમ નથી આ ભાષામાં સ > હ ની સ્પષ્ટતા નથી, પરંતુ ઝન્દ-(ગાથા અવેસ્તાની) ભાષામાં તેમજ ગ્રીક ભાષામાં સ > હ થયાની પ્રક્રિયા સારી રીતે વ્યાપક બની ચૂકી સમગ્રાય છે આ હનું ઉચ્ચારણ એ સમયે કંઠ્ય ધોષ હતું કે કંઠ્ય અથોપ હતું એ આપણે કહી શકવાની સ્થિતિમાં નથી, એટલું જ ઝન્દની ભાષામાં શબ્દારભે સ > હ થવાનું સામાન્ય હતું, ઉપરાંત પ્રત્યયોમાં પણ આ પ્રક્રિયા જોવા મળતી હતી; જેમકે સપ્ત > હપ્ત, સોમ > હઓમ, સ > હો, સૂક્ત > હૂત વગેરે, અસિ > અહી, નમસિ > નેમહી, ધારયસિ > ધારયેહિ; ક્વચિત્ શબ્દના મધ્ય ભાગમાં પણ : અસુ > અહુ, અસુર > અહુર વસુ > વહુ વગેરે. (Avesta Gram. by A. V. Williams Jackson, Pt. I. pp 41-45)

આદિમ ગ્રીક ભાષામાં સ > હ ની પ્રક્રિયા ઉપરના જ પ્રકારે જાણીતી હતી : જોસેફ રાઈટ જણાવે છે તે પ્રમાણે : આદિમ ગ્રીકમાં સ્વરોની પૂર્વે શબ્દારભેના સ્કારનો તેમજ જે સ્વરો વચ્ચેના સ્કારનો હ થતો અને પછી લુપ્ત થઈ જતો હતો. (Comp. Gram of Greek Lang, p 106)

યદ્યપિ પાલિમાં આવી પ્રક્રિયા પકડી શકાતી નથી, છતાં માત્ર સાતમી વિભક્તિના સ્મિન્ પ્રત્યયને સ્થાને વૈકલ્પિક મ્હિ થાય છે તે આનું ઉદાહરણ કહી શકાય : *ધર્મસ્મિન્ > પાલિ ધમ્મમ્હિ એકરૂપ-ઉપરાંત ગાથા-ભાષામાં પદ્માહિસિ પરિનિબ્બાહિસિ હોહિસિ હોહિતિ વિહાહિસિ વગેરે લવિષ્યકાળનાં રૂપોમાં મધ્યગ સ્ય ના વિકાસમાં હિ જોવા મળે છે (Pali Lit. & Lang., pp. 184-5)

પાલિની ઉત્તરની પ્રાકૃત ભૂમિકાઓમાં સ્વરોના મધ્યમાં આવેલા સ્કારનો હ થવાનાં

ઉદાહરણુ જોવા મળે છે : નિઃસરતિ > નીસરહ > નીહરહ, દિવસ- > દિવહ, દિવહ, - *શાસતિ > સાહહ > સસતિ > હત્તરિ, દ્વાદશ-ત્રયોદશ વગેરેનાં વારહ-તેરહ વગેરે રૂપો; ભવિષ્યકાળમાં દાસ્યામિ વગેરેનાં દાહિમિ, દાહામિ વગેરે રૂપોમાં સ્વ નો પાલિ જેમ હિ થવાનું વક્ષણ. અપ-ભ્રંશમાં, પ્રમાણમાં, આ સૂચક રીતે પ્રત્યયોના વિપયમાં માલૂમ પડી જ આવે છે. છટ્ટી વિભક્તિમાં એકવચનમાં °સ્ય > °સ્ત > °સુ > હ અને બહુવચનમાં °વામ્ > સં > હૈં; એ જ રીતે યસ્ય-તસ્ય-કસ્યનાં જાહ-કાહ-તાહ વગેરે રૂપો. (પિશલ, ખંડ ૨૪૬). પ્રાકૃતની પરંપરા અપભ્રંશને મળી જ છે અને અસ્મે-તુમ્હેનાં અમ્હ-તુમ્હ રૂપ છેક અર્વાચીન ભૂમિકા સુધી ચાલુ રહ્યાં છે, જેમાં હવે સ્વર જ મહાપ્રાણ ઉચ્ચરિત થાય છે.

વર્તમાન હિંદી ભાષામાં વર્તમાનકાળનાં હૂં હૈ હૈં રૂપ મળે છે તે પાલિ અચ્છતિ > પ્રા. અચ્છહ દ્વારા મધ્ય ગુજરાતના અચ્છહ > છહના ઉચ્ચારણમાં છ > સ થયા પછી કંઠ્ય અથોપ ઉચ્ચારણ થયે કંઠ્ય ધોપ હ માં પરિણમ્યુ છે. ગુજરાતીના એક બોલી-કુંગરપુર-વાંસવાડાના આજના રાજસ્થાન પ્રદેશની-‘વાગડી’ બોલીમાં કંઠ્ય અથોપ ઉચ્ચારણ જ જાણીતું છે : કૈ કરુ સુ તુ કર સ વગેરે. આનો ખ્યાલ ન હોવાને કારણે હૈં કરુ હુ, તુ કર હ એમ ખતાવવામાં આવે છે. વાગડી બોલીમાં હકાર સર્વથા નથી, તેથી જ કરુ.સુ, કર સ એવું ટોકું ઉચ્ચારણ એ હકારના રૂપમાં નથી.

બીલી બોલીઓમાં કંઠ્ય અથોપ સકાર ઉચ્ચરિત થાય છે. સર ન્યોર્ન એ. ગ્રિયર્સન આ વિષયમાં એમની ભારતીય ભાષા સમીક્ષાના ગ્રં. ૯, ભાગ ૩ જામાં આપેલી બીલી બોલીઓમાં પ્રાપ્ત: સાવધાન છે; પરંતુ ભારતીય વિદ્વાનો સાવધાન નથી હોતા. હમણું જ શ્રી. નેગીચંદ્ર જૈને ‘બીલી-હિન્દી કાશ’ પ્રસિદ્ધ કર્યો છે તેમાં હ વર્ણુ નીચે આપેલા વર્ણોમાં, તેમજ અન્યત્ર વચ્ચે કંઠ્ય સ ઉચ્ચરિત થાય છે તેવા શબ્દોમાં સર્વત્ર હ જ જાણ્યો છે. એથી જ સહ > હહ, હટ્ટકારક > હટારો આ શબ્દો વચ્ચે આદિ વ્યંજનના ઉચ્ચારણમાં અથોપ અને ધોપ વચ્ચે જે અંતર છે તે મુદ્રિત શબ્દોમાંથી પકડવું મુશ્કેલ બને છે.

સ્વ. ડૉ. ગુણે નોંધે છે તે પ્રમાણે સ. દશતુ દહ એ એક ઉદાહરણુ આ પ્રકારનું છે. હિંદી અને સિંધીએ ચ્યારહ તેરહ સોલહ અને કારહૈં તેરહૈં સોરહૈં. રૂપો સ્ > હ નાં સાચવ્યાં છે. ગુજરાતીમાં દિવસ > દિવહ દ્વારા ‘દહાડો’ (=દા:ડો) મહાપ્રાણ સ્વરિત શ્રુતિવાળો શબ્દ એનો વારસ છે.

સંયુક્ત વ્યંજનોમાં આઘાક્ષર તરીકે જ-વ-સ આવ્યા હોય તેનો પ્રાકૃતમાં હકાર થવાનું સામાન્ય હતું. સ્ના ધાતુનું ન્હા રૂપ અને એવા બીજા ઘણા શબ્દ મળ્યા છે, જે ગુજ. વગેરે સુધી આવતાં મહાપ્રાણ સ્વરિત દશામાં આવી રહેલ છે.

મને એમ લાગ્યું છે કે કંઠ્ય ધોપ હ સુધી આવવાને કે વિસર્ગ જેવા કે મહાપ્રાણ સ્વરિત ઉચ્ચારણુ જેવા ઉચ્ચારણુને પામવાને સકાર મધ્યવર્તી દશામાં કંઠ્ય અથોપ બને છે. ગુજરાત-સૌરાષ્ટ્રમાં જ-વ-સનાં કંઠ્ય-અથોપાત્મક ઉચ્ચારણુમાં આ આપણે છવંત અનુભવ છે.

આનંદની વાત છે કે ગુજરાતના જાણીતી ભાષાશાસ્ત્રી ડૉ. અંબાદાસ રવે સં. કરિમ્મતિ > પ્રા. કરિહિહિ રૂપમાં હકાર લખાયેલો છે તે આ કંઠ્ય અથોપ મહાર હોવામાં સહમત છે. (તા. ૨૦ મી ઓક્ટોબર, ૧૯૬૨ ને દિવસે ગુ. સં. મંડળ તરફથી બોલાવાયેલી ૪ થી ગુ. સં. કા. પરિષદના ભાષાવિભાગને પ્રમુખસ્થાનેથી ચર્ચાને અંતે ઉચ્ચારણ અભિપ્રાય)

ઐતિહાસિક દૃષ્ટિએ પાશ્ચાત્ય ભાષાવિજ્ઞાન

શ્રી. શાન્તિભાઈ આચાર્ય, અમદાવાદ

ભાષાવિજ્ઞાન શબ્દથી અહીં, અંગ્રેજીમાં લિંગ્વિસ્ટિક્સ સાયન્સ શબ્દ વપરાય છે તેની વિભાવના ઉદ્દિષ્ટ છે. આ વિભાવનાનો ઐતિહાસિક ક્રમ તપાસવો એ આ લેખનો હેતુ છે. વિષયના વ્યાપારને નજર સમક્ષ રાખીને અહીં, આ વિકાસમાં સુચક એવા મહત્વના સ્તંભોને જોવાનો પ્રયત્ન છે. અર્થાત્ “ભાષાવિજ્ઞાન” શબ્દ કે “શબ્દસમૂહ” થી આજે જે કંઈ સૂચવાય છે તે વિભાવના પૂર્વે ભાષાશાસ્ત્રે કયા મુખ્ય સ્તંભો પસાર કર્યા છે એ જોઈને આ શબ્દનો ફલિતાર્થ શો છે એ દૂકમાં તપાસવાનું અહીં ધાર્યું છે,

માનવસભ્યતાના ઉત્થાનને જોઈએ તો દુનિયાના જુદા જુદા ભાગોમાં નદીઓના પ્રદેશમાંથી એનો પ્રારંભ જણાય છે ભારતમાં (હવેના પાકિસ્તાનમાં) સિંધુ નદીની ખીણ, મેસોપોટેમિયામાં યુક્લિડિસ અને તાઇગ્રિસ નદીઓની વચ્ચેનો પ્રદેશ અને ઇજિપ્તમાં નાઇલ નદીની ખીણ વગેરેમાં ઉદ્ભવેલી પ્રાચીન સંસ્કૃતિઓની શોધ પરથી આ વિધાન થઈ શકે છે આપણે અહીં પાશ્ચાત્ય પૂરતી મર્યાદિત વાત કરવાની હોવાથી ભારતીય વિચારને અહીંથી ગાળી નાંખીશું ઇજિપ્તમાં અન્ય કળાઓ સમેત લિપિ પણ શોધાયેલી હતી નાઇલ નદીમાં પણ છોડતી જાલો (Papyrus) પર લખાણો કરવામાં આવતાં. પહેલાં તો આ લોકો વિચારને રજૂ કરવા ચિત્રોનો ઉપયોગ કરતા, પણ પછીથી આનો વિકાસ થઈને ધ્વનિને રજૂ કરતા વર્ણો વપરાવા લાગે છે ઇજિપ્તને જે સવલતો નાઇલ દ્વારા મળતી હતી તે રીતે મેસોપોટેમિયાને તાઇગ્રિસ અને યુક્લિડિસ દ્વારા મળતી હતી, પણ ઇજિપ્તનું લખાણ તથા ચિત્રલખાણ જેમ પથ્થર પર મળે છે તેમ ખૂબ જૂના લખાણને બાદ કરતાં બાકીનું મેસોપોટેમિયન લખાણ મોટે ભાગે માટીની તકતીઓ પર મળે છે, જે લગભગ ઈ. સ. પૂર્વે ૩૨૦૦થી ખૂબ પ્રચલિત થતું જણાય છે.^૧ આ લખાણ અરેબિક લિપિની જેમ જમણી બાજુથી ડાબી બાજુ વાંચવાનું છે.

સમય જતાં ગ્રીક અને રોમન લોકોએ યુરોપીય સંસ્કૃતિનો પાયો નાખ્યો. ઘણા વખત સુધી ગ્રીસનો ઇતિહાસ હોમરે ઇલિયડમાં^૨ વર્ણવેલ ટ્રોયના પતનથી શરૂ થયાનું મનાતું આવેલું, પણ ઈ. સ. ૧૭૭૦-૮૦માં, ઇલિયડ અને ઓડેસીમાં આપેલાં વર્ણનોથી પ્રભાવિત થઈ જર્મન વિદ્વાન સ્કલીમને (Schliemann) ખોદકામ દ્વારા સ્થળતપાસ કરી. પરિણામે ગ્રીસનો ઇતિહાસ બે હજાર વર્ષ પાછો ફેલાયો ગ્રીકોએ લ્યુકાસ^૩ કહે છે તેમ ભલે એના ઘણાંબધાં ઉન્નત્ત્વ પાસાંઓ એથેનિયનો પાસેથી લીધાં હોય, છતાં જે કંઈ એમણે લીધું છે તેમાં પોતાની સ્વતંત્ર બુદ્ધિમત્તાએ વિચારીને પોતાની રીતે સુધારણા કરી છે. એમણે આપેલ કાવ્ય, નાટક, સ્થાપત્ય, શિલ્પ, વક્તૃત્વ ઇત્યાદિ વિદ્યાઓનું નિરીક્ષણ આ વાતની સાક્ષીરૂપ બની રહે છે સૌથી વિશેષ પ્રદાન એમણે કર્યું છે તત્ત્વજ્ઞાનમાં. થેઇલિસ (Thales), પાયથાગોરસ (Pythagoras), સોક્રેટિસ (Socrates), પ્લેટો (Plato)

૧. જુઓ A Text-book on World History by D. R. Sar Desai & B. K. Gokhale (1958), p. 32.

૨. જુઓ Illiad, - Homer, Tr. by Rien E. U (1950)

૩. જુઓ A Short Aistory of Civilization by Lucas, p. 145

એરિસ્ટોટલ (Aristotle), એમ્પેડોયર (Empedocles), અને એનેક્સોગોરસ (Anaxagoras) એ સાત મહાનુભાવોએ આ ક્ષેત્રમાં ખૂબ કામ કર્યું છે. આમાંથી સોક્રેટિસ (ઈ. સ. પૂ. ૪૬૯-૩૯૯), પ્લેટો (ઈ. સ. પૂ. ૪૨૭-૩૪૭) અને એરિસ્ટોટલ (ઈ. સ. પૂ. ૩૮૮ થી ૩૨૨)ની ત્રિપુટી તો ચિરંજીવ બની ગયેલ છે. આ તત્ત્વચિંતકો કુદરતનાં નિરીક્ષણોને બુદ્ધિથી સમજાવતા, કોઈ ધાર્મિક માન્યતાઓથી નહિ. સોક્રેટિસના વાર્તાલાપોને 'પ્લેટોએ "ડાયલોગ્સ" નામે સંગૃહીત કરેલ છે તે જોવાથી આની ખાતરી થાય છે. આમ અનેક સાંસ્કૃતિક ઘટનાઓ ત્યાં ઉદ્ભવી છે. બુદ્ધિથી સમજવાની પ્રણાલી સ્થપાઈ છે. હેમિસ્ટન કહે છે તેમ ગ્રીક પ્રજા પ્રજા તરીકે પહેલી બુદ્ધિવાદી પ્રજા હતી અને ત્યારે ગતાનુગતિકતાનું જગત પર સામ્રાજ્ય હતું ત્યારે આ પ્રજા બુદ્ધિપ્રધાન તર્કની રીતે વિચારતી હતી. એઓએ તત્ત્વચિંતનમાં અનેક શાખાઓને આવરી લીધી હતી જેમાં ભાષા પણ અપવાદરૂપ રહેલ નથી.

૧. ગ્રીકોએ ભાષા વસ્તુગત છે કે ઐચ્છિક એવી પ્રતીકરચના છે એ પ્રશ્નથી ભાષાનો વિચાર આરંભ્યો છે. એ ઐચ્છિક એવી પ્રતીકરચના છે એ જાતનું સમર્થન પણ પ્લેટોના 'ક્રેટીલસ' માં થયેલું જોવા મળે છે. પણ છતાંયે તત્ત્વજ્ઞાન સાથે પ્રશ્ન વિચારાતો હોવાથી ભાષા વસ્તુગત છે એ વિચાર ઘણા લાંબા સમય સુધી ચાલુ રહ્યો છે. પ્લેટો અને એરિસ્ટોટલમાં આ રીતે ભાષાવિષયક છૂટીછવાઈ માહિતી મળે છે; પણ સમય જતા ડાયોનિસસ, ગ્રેક્સ, એપોલોનિયસ, ડિસ્કોલસ અને હેરોડિયન જેવા ભાષાવિદોએ ગ્રીકના વ્યાકરણને વિસ્તારેલ છે તેમાં વર્ણનાત્મક રીતિના પણ પ્રયાસ છે, પણ મહદઅંશે તત્ત્વજ્ઞાનની સાથે જ વ્યાકરણ વીટળાયેલું છે. ગ્રીકોનો ભાષાનો આદર્શ લૉજિકલ લેન્ગ્વેજ હોવાના કારણે આમ બનવું એ સ્વાભાવિક પણ છે.

૨. ગ્રીક સભ્યતાની સાથોસાથ રોમન સભ્યતાને પણ જોવી પડશે. રોમના ઉદય પહેલાં ઇટાલીમાં ઇટ્રસ્કાન (Etruscan) લોકોની એક સભ્યતા હતી. ગ્રીકને મળતી લિપિમાં જ આનાં લખાણો છે. આ પ્રજાને રોમન પ્રજાએ લગભગ ઈ. સ. પૂર્વે ૭મી સદીમાં હરાવીને રોમનું સ્વતંત્ર સામ્રાજ્ય સ્થાપવાનો આરંભ કર્યો. ઇટાલીની દક્ષિણે રહેલું ગ્રીસ લડવાની શક્તિ ગુમાવી બેઠું હતું. રોમનોએ એનો લાલ લીધો અને ઈ. સ. પૂર્વે ૨૭૦ સુધીમાં તો ગ્રીસને નગરરાજ્યોમાં વહેંચી દીધું. આ રીતે ઈ. સ. પૂર્વે ત્રીજી સદી સુધીમાં રોમનોની હરીફ સત્તામાં કાર્થેજિનિયસ સિવાય કોઈ જ ન રહ્યું. આ લોકો પણ લડાયક વૃત્તિના ન હતા એનો રોમનોએ લાલ લીધો. પરિણામે ત્રણ (Punic Wars) પ્યૂનિક યુદ્ધો થયાં અને છેવટે રોમનો વિજયી થયા. આ સામ્રાજ્યે છેક ખ્રિસ્તી ધર્મના ઉદય સુધી એકચઢી રાજ્ય ચલાવ્યું. આ લોકોએ ગ્રીકો પાસેથી મેળવેલો સરકારવારસો પશ્ચિમની દુનિયામાં ફેલાવ્યો.

રોમનોની ભાષા લેટિન હતી, પણ ગ્રીક ભાષાને એઓએ ઉવેખી નહિ, બલકુ, ગ્રીકનું જ્ઞાન હોવું એ કંઈક ઉચ્ચ દરજ્જાનું મૂલ્યન કરનાર વસ્તુ ગણાવું અને સામ્રાજ્યમાં લેટિનની સાથે ગ્રીક પણ રાજ્યભાષા ગણાતી.

રોમનો આ ભાષાથી એટલા બધા પ્રભાવિત થયા હતા કે એઓએ પોતાની લેટિન ભાષાનાં વ્યાકરણોમાં ગ્રીક વ્યાકરણોની પદ્ધતિ અપનાવી. અને એ પણ એટલી દદ સુધી કે ગ્રીકમાં જે વ્યાકરણી વિભાગો હોય તે લેટિનમાં ન હોય તોયે એમાં એવા જ વિભાગો લખા-

વામાં આવ્યા. આવાં વ્યાકરણો હજુ હમણાં સુધી અંગ્રેજી શાળાઓમાં ચાલતાં

પાશ્ચાત્ય સંસ્કૃતિના વિકાસ સાથે વ્યાકરણ પરદેશી ભાષા શીખવાનું સાધન બન્યું. ઈ. સ. ની છઠી સદીમાં કોન્સ્ટન્ટિનોપલમાં લેટિન શીખવવા માટે^૫ પ્રિસ્કિયન વ્યાકરણનો ઉપયોગ કરે છે. આ ઉપરાંત વ્યાકરણનું કામ હતું શિષ્ટ દૃતિઓના પૃથક્કરણમાં મદદરૂપ થવાનું. ન્યારે પ્રશિષ્ટ ભાષાઓનું જ્ઞાન ઓછું થતું ચાલ્યું ત્યારે વ્યાકરણે આવી ભાષાઓ શીખવવાના સાધન તરીકે પણ કામ આપ્યું અને પછીથી તે છેક હમણાં સુધી વ્યાકરણે આ કામે જ કર્યું છે. આથી જ છેક પદ્મ સદીમાં ઇટાલીમાં જે જૂની છપાયેલી ગ્રોપડીઓ મળે છે તેમાં આપણે ગ્રીક અને લેટિન વ્યાકરણોને^૬ પણ જોઈએ છીએ. પછીથી આ માળખું છેક ૧૮મી સદીના અંત સુધી ચાલ્યા કર્યું છે લેટિને ગ્રીક પરથી લીધેલું આ માળખું પશ્ચિમની ધણીયધી ભાષાઓને એમ ને એમ લગાડાતું રહ્યું છે અને આ છેક ૧૮મી સદીના અંત સુધી એવું તો ઘર કરી બેઠું છે કે તેને (Dykema) ડીકેમાએ વાપરેલી ઉપમા દ્વારા કહીએ તો પૂર્વે સૂર્ય પૃથ્વીની આસપાસ કરે છે એ માન્યતામાં જેવી અંધશ્રદ્ધા રાખતા હતા તેવી જ અંધશ્રદ્ધા આપણે એક ભાષાનું વ્યાકરણ દરેક ભાષાને લાગુ પડે છે એ માન્યતામાં રાખી છે.

વ્યાકરણનું કામ આવું બની ગયું હતું. બીજી બાજુએ ભાષાનો અભ્યાસ માત્ર તત્ત્વ-ચિંતકો જ કરતા હતા અને એ દૃષ્ટિને પરિણામે ભાષાના ઉદ્ગમ વિશે ગાઉ-ગાઉ અને પૂછ-પૂછ જેવા સિદ્ધાંતો અસ્તિત્વમાં આવ્યા, જેમાં તત્ત્વજ્ઞાનની અસર નીચે ભાષા ચગદાયેલી છે, ઉપરાંત ભાષાનો અભ્યાસ શબ્દોનાં મૂળ શોધવામાં જ રાખે છે.

ભાષામાં શબ્દોના મૂળ અને વ્યુત્પત્તિઓ શોધવાની રીતિ જરેશોરથી ચાલતી હતી હિબ્રુ અને અરેબિકનો અભ્યાસ થતાં ચાલુ અંગ્રેજી ભાષામાં ઘણા શબ્દો આ ભાષાઓમાંથી આવ્યા હોવાનું દર્શાવ્યાના પ્રયત્નો થયા. અહીં સુધી તો કશો જ વાંધો નહિ, પણ પછીથી (Yucatán) યુકેતનની મય (Maya) ભાષામાં હિબ્રુના ઘણા શબ્દો હોવા પરથી એમ દર્શાવવામાં આવ્યું કે “મય” લોકો એ ઇઝરાયેલની એક ખોવાયેલી પ્રજા છે! આવી તદ્દન અશાસ્ત્રીય વિચારણાઓના અન્ય નમૂનાઓ પણ મળે છે. આ જોતાં તો કેરોલ^૭ના “અશાસ્ત્રીય અને કેલ્પનેત્ય વ્યુત્પત્તિઓ આપેલી એ માનવજાતની સનાતન ટેવ જણાય છે” આ વિધાનનું સૌથીકંઈ તરત દેખાઈ આવે છે.

૩. જગતમાં ન્યારે નવી નવી ભાષાઓની એકબીજી પ્રજાને જાણુ વધે છે ત્યારે આ પરિસ્થિતિમાં તકાવત થાય છે. સુસાફરો અને મિશનરીઓએ આફ્રિકા, અમેરિકા અને જગતના બીજા દેશોની ભાષાઓના સંબંધમાં આવી એ પર શબ્દકોશો, વ્યાકરણો વગેરે રચ્યાં ત્યારે જુદી જુદી ભાષાઓ જાણવાનું કુતૂહલ વધ્યું. પરિણામે જુદી જુદી ભાષાઓની સામગ્રી એકઠી થવા લાગી. ઉદા. ઈ. સ. ૧૮૦૬ થી ૧૮૧૭ સુધીમાં માઈઝિફેલ્ડસના શીર્ષકે તળે એડેલંગ અને વેતર એ બંનેએ લગલગ ૫૦૦ ભાષાઓમાં ઇશુની^૮ પ્રાર્થના સંગ્રહી છે. આ અને

૫. જુઓ Applied English Linguistics, p. 4.

૬. જુઓ A History of Classical Scholarship, J. E. Sandys, Vol. 2, p. 61.

૭. જુઓ The Study of Language by John B. Carroll, p. 17.

૮. એનન, પૃ. ૧૭.

આવા ખીજા ધણા ધણા સંગ્રહો હોવા છતાં ભાષાનો શાસ્ત્રીય અભ્યાસ હજી શરૂ થયો જણાતો નથી. શાસ્ત્રીય અભ્યાસના પ્રારંભનો યશ, સર વિલિયમ જેન્સને ફ્રાંજે જન્ય છે. સર જેન્સે ઈ. સ. ૧૮૮૬માં એક ભાષણમાં, ભાષાનાં ઇન્ડોયુરોપિયન કુળ હોવાની વાત કરી અને આ કુળમાં ગ્રીક, લેટિન, સંસ્કૃત, જર્મેનિક અને સ્લેવિક જેવી શાખાઓ પણ છે એમ જણાવ્યું ત્યારથી ભાષાના શાસ્ત્રીય અભ્યાસનો પ્રારંભ થયો ગણાવી શકાય. આ વાતને ઉપાડી લઈને બોપ (Bopp), રાસ્મસ (Rasmus), ગ્રીમ (Grimm) અને પોટ (Pott) આગળ ચાલ્યા છે, આ આખોયે સૈદ્ધાંતિક પદ્ધતિ એતિહાસિક-તુલનાત્મક ભાષાવર્ણનનો રહ્યો. આના પરિણામે ગ્રીમ્સ લો (Grimm's Law) તુ ઘડતર થયું તેમજ બ્રુગ્મન (Brugmann), અને ડેલબ્રુક (Delbruck) ના આડટલાઈન ઓફ કમ્પરેટીવ ગ્રામર ઓફ ઇન્ડો-યુરોપિયન લેન્ગ્વેજીસ (18861-900) ના ગ્રંથો અસ્તિત્વમાં આવ્યા.

તુલનાત્મક પદ્ધતિમાં સંસ્કૃત ભાષાનો ફ્રાંજો મહત્ત્વનો છે એની પાશ્ચાત્યોને પહેલી વાર જાણ થઈ. સંસ્કૃતના અભ્યાસથી એ વિદ્વાનોને પાણિનિનો પરિચય થયો. પાણિનિએ સંસ્કૃત ભાષાનો વર્ણનાત્મક પદ્ધતિએ અભ્યાસ કરીને વ્યાકરણ રચ્યું છે. એમની પદ્ધતિ આજના ભાષા વિશેના વર્ણનાત્મક માનદંડથી મપાઈને પણ ટકી શકે તેવી અણીશુદ્ધ છે. તેથી જ બ્લુમફિલ્ડને^{૧૦} (Bloomfield) પણ કહેવું પડ્યું કે સંસ્કૃત ભાષાનું પાણિનિએ વર્ણવેલું વ્યાકરણ એ માનવબુદ્ધિનું એક ઉચ્ચતમ શિખર છે અને (આપણને જે જરૂરી છે તે) ભાષાઓના વર્ણન માટે તો જેને સામે રાખ્યા વગર ચાલે જ નહિ તેવો ઉમદા નમૂનો છે.

આ વર્ણનપદ્ધતિની પ્રત્યક્ષ કે પરોક્ષ અસર નીચે પશ્ચિમમાં “વર્ણનાત્મક પદ્ધતિ”નો અભ્યાસ મંડાયો. આ પદ્ધતિએ પદ્ધતિ ઇન્ડો-યુરોપિયન કુળ સિવાયની અન્ય ભાષાઓ વર્ણવવાનું શરૂ થયું અને જુદાં જુદાં પુસ્તકો પ્રકાશિત થવા લાગ્યાં. આમાંનાં ફ્રિડ્રિક મ્યુલર (Friedrich Muller), સ્ટેઈનથલ (Steinthal) અને વોન દે ગેબલેન્ટ્ઝ (Von der Gabelentz) નાં પુસ્તકો મુખ્ય છે. લગભગ આ જ અરસામાં વુન્ડ્ટ (Wundt) પોતાની ‘સોશલ સાયકોલોજી’ની ગ્રંથમાળામાં ભાષાના મનોવૈજ્ઞાનિક પાસાનો વિચાર કરે છે. ૧૯મી સદીના મધ્યમાં તો વાક્-ધ્વનિવિજ્ઞાન (Articulatory phonetics) પર પણ પુસ્તક બહાર પડે છે અને ત્યાર બાદ હેલ્મહોલ્ટ્ઝ (Helmholtz) શ્રાવ્યતાની દૃષ્ટિએ ધ્વનિવિજ્ઞાન (Acoustic Phonetics)નો અભ્યાસ કરે છે.

ઉપરાંત, ભાષાવિજ્ઞાન આજ સુધી અલંકારશાસ્ત્ર અને વાણીશાસ્ત્ર (Philology) વચ્ચે ગોટવાયા કરતું હતું એ ગૂંચવણ પણ નીકળી ગઈ અને પોટ (Pott) દ્વારા એ સ્પષ્ટતા પામ્યું. વાણીશાસ્ત્ર અને અલંકારશાસ્ત્રનું ક્ષેત્ર વિસ્તૃત હોઈ, એ ભાષાશાસ્ત્રની સીમાથી ઉપર આવે છે. જેમ રસાયણશાસ્ત્રના ક્ષેત્રની ઉપર જીવશાસ્ત્ર (Biology) આવે છે તેમ. આવી સ્પષ્ટ સમજણ આ વિશે થઈ ચૂકી. આમ આ સદીમાં ભાષાનો અભ્યાસ “શાસ્ત્ર”ની કાઠિમાં આવી ગયેલ છે, પણ હજી ભાષાને વ્યવસ્થા (System) હોય છે એની જાણકારી વિમ્નત પ્રમાણમાં થઈ જણાતી નથી. આથી હજી ભાષાનું વર્ગીકરણ વાળીના વિભાગો (Parts of

૧. જુઓ Leonard Bloomfield “Language.” p. 14.

૧૦. જુઓ “Language” સમયિક. વાસ્તુમ ૫ (૧૯૨૯), ૫. ૨૧૭ પાસે Bloomfieldના Review.

Speech)માં જ મર્યાદિત છે. 'ભાષામાં ઉચ્ચારણહુલત્વ હોય છે તેની જાણ આ સદીને થયેલી છે. પણ "ફિઝિયોલોજી" જેવો શબ્દ હજી ઘડાયો નથી; જો કે હર્મન પોલ્સને વાંચતાં એમાંથી આ અંગેની વિભાવના પડેલી હોવાનું જણાય છે. ઉપરાંત ધ્વનિપરિવર્તનને વિકાર ગણવામાં આવતો હતો તે વિકાર નથી, પણ ભાષાની નિયમિત એવી ઘટના છે એમ ગ્રીમાદિ તુલનાત્મક ભાષાશાસ્ત્રીઓએ સિદ્ધ કરી બતાવ્યું.

આ રીતે ૧૯મી સદીના અંત અને ૨૦મી સદીના પ્રારંભ મુઘીમાં આજે ભાષાવિજ્ઞાનથી જે ઉદ્દિષ્ટ થાય છે તેની ભૂમિકા બંધાઈ ચૂકેલી જણાય છે. આ સંક્રાંતિકાળે ભાષાવિજ્ઞાનની જે સ્થિતિ છે તેને બ્લુમફિલ્ડ (Bloomfield) આ શબ્દોમાં રજૂ કરે છે: "The merging of these two streams of study, the historical-comparative and the philosophical-descriptive has made clear some principles that were not apparent to the great Indo-Europeanists of the nineteenth century, as represented, say, by Hermann Paul. All historical study of language is based upon the comparison of two or more sets of descriptive data. It can be only as accurate as this data permit it to be."^{૧૧}

૪. આ પછીથી આગળ ચાલતો ભાષાશાસ્ત્રનો ઇતિહાસ ભાષાને વર્ણનાત્મક પદ્ધતિ જેવા શાસ્ત્રીય માનદંડથી માપીને ચાલે છે એનો પ્રથમ અણસાર આપણને સ્વિસ ભાષાશાસ્ત્રી ફર્ડિનાન્ડ દે સેસ્યુર (Ferdinand de Saussure)માં મળે છે. એણે ભાષાને દૃશ્યમાન અને દર્શાવનાર એવાં બે પાસાંવાળા પ્રતીકોની વ્યવસ્થા^{૧૨} કહી છે. આ ભાષાશાસ્ત્રની વર્ણનાત્મક પદ્ધતિ પર અસર પડી જણાય છે. જોકે ચુસ્ત બ્લુમફિલ્ડિયનો આ વાતને નકારે છે એ પણ આ રીતે એની અસરને તદ્દન નકારી શકાય એમ નથી^{૧૩}

વર્ણનાત્મક ભાષાશાસ્ત્રની પદ્ધતિના વિકાસ સાથે એની જુદી જુદી રીતિ પ્રમાણે ત્રણ સ્કૂલ શરૂ થાય છે. પહેલી તે ત્રુબેટ્સ્કોય (Trubetzkoy)ની આગેવાનીવાળી પ્રાગ સ્કૂલ, બીજી તે બ્લુમફિલ્ડની નેતાગીરી નીચેની અમેરિકન સ્કૂલ, અને ત્રીજી જેદમસ્લેવ (Hjelmslev)ની અસર તળેની કોપનહેગન સ્કૂલ. આ ત્રણે સ્કૂલો વર્ણનાત્મક ભાષાવિજ્ઞાન પર ભાર મૂકે છે, પરંતુ એની પદ્ધતિ વિશે ત્રણેમાં થોડો તફાવત રહ્યો છે. આજે પ્રાગ સ્કૂલ તો લગભગ અસ્તિત્વમાન નથી રહી એમ કહી શકાય એવું છે; જોકે એની અસર હજીયે યુરોપીય દેશોમાં છે. અમેરિકન સ્કૂલ બ્લુમફિલ્ડના મંતવ્યથી ચાલતી સ્કૂલ છે બ્લુમફિલ્ડ એડવર્ડ સેપીરની સાથે ભાષાના ઉચ્ચારિત સ્વરૂપ અને એના વર્ણન પર ધ્યાન આપનારા અમેરિકાનું જે પહેલું જૂથ હતું તેમાંના એક છે.^{૧૪} બ્લુમફિલ્ડને ઇન્ડો-યુરોપિયન ભાષાકુળનું તો જ્ઞાન હતું જ, પણ એણે આ વર્ણનપદ્ધતિના માનદંડથી ઇન્ડો-યુરોપિયન કુળ, સિવાયની એવી અમેરિકન ઇન્ડિયન

૧૧. જુઓ "Language," by L. Bloomfield, p. 19.

૧૨. જુઓ "Cours de linguistique generale" by Ferdinand de Saussure

૧૩. જુઓ Structural Linguistics, Andre Martinet's article in "Anthropology to-day," p. 575.

૧૪. જુઓ "યુનાઈટેડ સ્ટેટ્સમાં ભાષાશાસ્ત્ર અને ભાષાશિક્ષણ" શીર્ષકતળેનો "મનીષા" (૧૯૫૫) એક્ટો-નવે.)માં ડૉ. જોન ગરપર્ડનો લેખ.

જાતિની ભાષાઓ પર કામ કર્યું અને થોડાં વર્ષોમાં અનેક વિદ્યાર્થીઓને આ રીતે કામ કરવાની કેળવણી આપી દીધી. બીજા વિશ્વયુદ્ધને કારણે લશ્કરોને ભાષાઓ શીખવવાની જરૂર જણાઈ. આ અંગે સરકારે ભાષાશિક્ષણની યોજનાઓ ઘડી હતી તેમાં પણ આ પદ્ધતિ અજમાવાઈ હતી અને એનાં ઉત્તમ પરિણામો આવ્યાં હતાં. આ રીતે અમેરિકામાં આ પદ્ધતિનો વ્યવસ્થિત અને પદ્ધતિસરનો વિકાસ થયો છે.

ત્રીજી સ્કૂલ આમ તો બહુમંદિરની વિભાવના સાથે સહમત છે, પણ અમેરિકન સ્કૂલની જે પદ્ધતિ છે તેમાં ધ્વનિઘટકવિપયક કેટલુંક આગળથી માની લેવામા આવે છે જે બરાબર નથી એમ એ કહે છે. એટલે આ સ્કૂલ “ ફોનેમિક વાયસ ” સાથે સહમત નથી આ રીતે આમાં જે તફાવત છે તે પદ્ધતિ અંગેનો જ છે.

૫. આ પદ્ધતિઓને બાદ કરતાં જે મૂળ વિચાર રહેલો છે તે ભાષાના માળખાનો છે. પ્રત્યેક ભાષાને પોતાનું માળખું હોય છે. આ માળખું ધ્વનિઘટક, સાર્થઘટક ઇત્યાદિ જેવા ઘટકોનું બનેલું હોય છે. આ રીતે આજનું ભાષાશાસ્ત્ર આવા ઘટકોની વિભાવના પર મંડાયેલું છે, એટલે ભાષાનું ન્યારે પૃથક્કરણ કરવામાં આવે ત્યારે આવા પાયાના ઘટકો અને એની ગોઠવણ-મેળવણીને^{૧૫} તપાસવાની હોય છે અને આવી તપાસ દ્વારા ભાષાના માળખાને સમજવાય છે. આ ઘટકોની વાત કરતાં આપણે રશિયન ભાષાશાસ્ત્રનો ઉલ્લેખ કરવો જરૂરી બને છે, કેમકે ન્યારે પ્રાગ સ્કૂલના ભાષાશાસ્ત્રીઓમાં ધ્વનિઘટકની વિભાવના જન્મતી હતી તે જ સમયમાં બાઉદોઈન દે કોરતેનોય (Baudouin de Courtenay) માં ધ્વનિઘટકની વિભાવના આવી ગયેલી જણાય છે.

ભાષાના ઉપર કહ્યા તે ઘટકો શું છે એ સમજવું એટલે સમગ્ર ભાષાશાસ્ત્રને સમજવા બરાબર છે. આ વિકસતા જતા સિદ્ધાંત પ્રમેયોનો પ્રશ્ન છે. આની સૈદ્ધાંતિક ચર્ચાઓ જુદા જુદા દષ્ટિકોણથી, આ ક્ષેત્રમાં, પુષ્કળ થયેલી છે એની વિગત અહીં અપ્રસ્તુત છે. ઈ. સ. ૧૯૫૦ પછીના બાકીની બંને સ્કૂલના વક્ષણને બેતાં બંને વચ્ચે એકવાક્યના આવવાનાં સુચિત્ત જણાય છે. ખાસ કરીને હોકેટ (Hockett) માં આ બંનેને સંતુલિત કરવાનો પ્રયત્ન જણાય છે. માર્ટિનેટના ત્રણતરફીય પદ્ધતિની ફોનોલોજી પરના લેખની એણે જે સમીક્ષા કરી છે તેમા આ પદ્ધતિ પ્રત્યે સમભાવ જણાય છે. આની જેમ જ ન્યારે અમેરિકન ભાષાશાસ્ત્રનાં જે “ વાયનરી ઓપોઝિશન ” ના હાઇપોથિસિસ પર આશંકા મેવાની હતી ત્યારે મિસીગનમાં ૧૯૫૧ના ઉનાળામાં આપેક્ષાં યુનિવર્સિટી વ્યાખ્યાનોમાં જેકાબસને આ હાઇપોથિસિસ પ્રત્યે મમતા દર્શાવી હતી

આ રીતે બેતાં માનવને લગતાં અન્ય શાસ્ત્રોએ વિકસાવેલી પદ્ધતિ કરતાં ભાષાવિજ્ઞાને ઝડપથી પોતાની પદ્ધતિને શાસ્ત્રીય રૂપ આપ્યું છે. આ વિજ્ઞાનની વિભાવનાનો કમિત્ત વિકાસ બેથા પછી એ શબ્દસમૂહના દ્વિતીયાર્થને આપણે તપાસીએ.

૬. ભાષાવિજ્ઞાન એ શબ્દસમૂહમાં ભાષા અને વિજ્ઞાન એવા બે શબ્દો રહેલા છે. એ બંને શબ્દોની યથાર્થ સમજણ એને પામવાની ગુરુ ચાવી છે. “ ભાષા ” શબ્દ સાંભળનાં જ આપણા મનમાં “ વ્યાકરણશુદ્ધ બોલવું એ ” “ પુસ્તકમાં લખેલું એ ” “ પ્રખ્યાતિ જેવાં ચિત્રો ઊપસી આવે છે. આવા ભાષા વિશેના ખ્યાલો અંધારા ઢોવાના કારણે આવા ચોક્કસમાં

૧૫. “ સંસ્કૃતિ ” માંના “ યુગસાક્ષીનું ‘વનવંચ’ ” વિષયક લેખોમાં ૩૯ પ્રત્યાપ પાડિલે વાપરેલો શબ્દ.

અંધ એસે તે જ શુદ્ધ ભાષા, બાકીની તે અશુદ્ધ, હીન, એવું ઘણી વાર માની લેવાય છે. આવા ખ્યાલોની પાછળ ઘણુખરુ અમુક વર્તુળમાં બોલાતી ભાષાનો સામાજિક દરજ્જે જ નાણેઅજાણે ભાગ લેજવતો હોય છે, જેની ભાષાશાસ્ત્રીને મન વિશેષ ક્રિમત નથી એટલે “ભાષા” શબ્દથી ભાષાશાસ્ત્રીને મન જે ઉદ્દિષ્ટ છે તે તો કોઈ પણ સમાજના મનુષ્યમુખ્યત્ર દ્વારા ઉત્પન્ન થતા સાર્થ ધ્વનિઓ જ છે સામાજિક દરજ્જાના માપથી પછી એ શુદ્ધ હોય કે અશુદ્ધ, ભાષાશાસ્ત્રીને મન તો એ ઉક્તિ જ છે.

આમાંનો ખીજો શબ્દ, નિરીક્ષણથી તારવેલી અને કોઈ ચોક્કસરૂપે રજૂ થયેલી વિચારણાનો સૂચક છે પરિવર્તન એમાં સમાવિષ્ટ છે. આજનાં તારવેલાં વિધાનો વિશેષ સામગ્રીની સપ્રાપ્તિથી આવતી કાલે ફેરવવાં પડે તો એમાં આશ્ચર્ય નથી. ઊલટું, વિજ્ઞાનમાં એ જ ક્રમ છે. આમ આ બંને શબ્દને જોતાં એમાંથી દ્વિતીય એ નીકળે છે કે ભાષાવિજ્ઞાનના અભ્યાસમાં ભાષામાંથી જ માનદ ઊભો કરીને એના માળખામાં પલડો ઘટકોને શોધી કાઢીને એ ઘટકોનો એકબીજા સાથેનો સંબંધ નક્કી કરી આપવાનું કાર્ય જ મૂર્ધન્યાભિપિક્ત છે. આનાથી ધ્રુવ કાર્ય તે આ શાસ્ત્રની આજની વિભાવનાથી બહારનું ઠરે છે.

RURAL PLANNING SECTION

REPORT

The section on Rural Planning met in the afternoon on the 20th October, 1962. About 10 papers were contributed by the following persons :-

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| 1. Shri R. K. Trivedi | National Count |
| 2. Shri V. V. Divetia | Regional disparities in income of Gujarat Districts |
| 3. Dr. C. H. Shah | Farm Production and Resource use in Agriculture in Gujarat |
| 4. Shri Tara Shukla | Capital formation in Agriculture in Gujarat, 1951-61 |
| 5. Dr. V. S. Vyas | Cattle problem in Gujarat |
| 6. Dr. G. A. Kapadia | Study of Rainfall of Kutch |
| 7. Shri A. C. Shah | Cooperative Credit in Gujarat : Progress and Problems |
| 8. Shri P. J. Divetia | Need to develop research techniques for marketing of Agricultural products |
| 9. Shri Vimal Shah | Small-scale and cottage industries in Gujarat |
| 10. Shri S. M. Shah | Studies relating to regional development |

There were about 25 participants in this section. Shri V. L. Mehta presided over; but as he left for Bombay on the same day, Prof R. K. Amin prepared the report and presented it before the plenary session.

These papers can be grouped into 4 categories : (1) relating to Statistical information, (2) relating to physical resources and their use in Gujarat State, (3) relating to organisational problems in agriculture and industries, and (4) relating to research.

In the first category there were two papers : (1) National Count by Shri R. K. Trivedi and (2) Regional disparities in income of Gujarat Districts by Shri V. V. Divetia. The first was mainly explaining the progress of census operations in India since 1872.

Especially the special studies to be undertaken in 1961 Census were explained. These studies are (1) Socio-economic survey of 41 villages, (2) Survey of Handicrafts, (3) Survey of fairs and festivals, (4) Study of the schedule castes and schedule tribes and (5) Study of marriage sex, and fertility. The significance of census results in the research of various subjects like Economics, Sociology, Medicine etc. was also discussed in this paper.

The second paper attempted to present district-wise income of Gujarat State and tried to evolve the criteria indicating the degree of backwardness of the area or district. Especially, sectoral distribution of income and per-capita income viewed in the context of the density of population were suggested as the possible criteria for indicating the degree of backwardness of any area.

In the discussion which followed on this paper, it was pointed out that there are various limitations of measuring districtwise income especially the balance of payment aspect i. e. income arising from outside the area for the residents of the area assumes a greater importance – the smaller is the area. It was further suggested that the per-capita expenditure should very well be considered as a more reliable figure since it is relatively more stable and includes the balance of payment-income. The linking of per-capita income with density of population is also not justified. Since there existed so far one tendency in India the progressiveness in agriculture enabled more people to subsist on per acre of net area cultivated. The progressiveness in agriculture and standard of living were not correlated although since the demonstration effect is working powerfully in rural areas at present, there may be some changes in this regard in the near future.

A point was also made that the per-capita income is an inadequate measure since it is important to find out the degree of distribution of income in the area to indicate the degree of backwardness.

In the second group of papers important problems relating to physical resources of Gujarat State were discussed. In the paper by Tara Shukla, "Capital Formation in Agriculture in Gujarat, 1951-61", it was pointed out that there has been an increase of 36 p.c. in capital formation in Agriculture in the Gujarat State which is very high as compared to the average of India. The labour supply in rural areas has increased by 82 p.c. during this period and since the agricultural income has increased by about 100 p.c., it can be concluded that the capital output ratio, both incremental as well as average, has gone up. In another paper, Farm production and Resource use in agriculture in Gujarat State on the basis of cost conditions and fluctuations in output, it was shown that the minor irrigational facilities such as tube wells, wells, etc. assume a greater importance in the context of the economy of Gujarat. Dr. Vyas in his paper on Cattle Problem in Gujarat has tried to show that the allocation of funds for animal husbandry is inadequate in the third five year plan taking into account the needs of Gujarat State. It is time, Dr. Vyas suggested, that the use of cattle wealth of Gujarat should be made in a scientific way, since there is a great deal of scope for the development of mixed farming as well as dairying in this area.

In the study of rainfall of Kutch, Dr. Kapadia has brought out various salient characteristics of the rainfall in Kutch during the last 50 years. It is distressing to find that the average is falling down. This will surely create a problem in the next 50 years for the agriculture of Kutch as well as for the surrounding areas.

One can surely point out by way of suggestion that the capital formation in agriculture in Gujarat has both capital widening and deepening and not

capital widening as shown in the paper by Tara Shukla. Secondly, the amount of capital formation as taken from the census figures is not the correct figure from the point of view of measuring productivity of capital. The organisational as well as structural changes which have taken place in Gujarat are most important in raising agricultural productivity. The census also does not include all types of capital formation although, it is quite clear from the census figures that the nature of capital is undergoing a rapid change in Gujarat State.

As regards the resource use, it has been suggested that the minor irrigation will increase the productivity in Gujarat far more than any other type of investment. This is probably not proved. There is still a scope for organisational and structural changes which would increase productivity rapidly. In agriculture also, not one change but a simultaneous application of the whole chain of changes is more important to obtain full results.

As regards the rainfall of Kutch, it would have been better had it been possible to discuss the rainfall in Saurashtra and Kutch together. Probably, there has been important and spectacular changes in the rainfall of Saurashtra area. The effect of Sakkar barrage in Sind on the climate of Kutch and Gujarat deserves a close study.

In the third group there were two papers : one on Cooperative credit and the other on Marketing. It is very clear from these papers that there has been a spectacular increase in the supply of credit in Gujarat State through cooperatives. Even from the point of view of scale, size and other criteria, the cooperatives in Gujarat are better than those of any other State in India. The notable thing is that the money lenders have not remained as the most important source of supply of credit as they were a few years ago. If the present trend continues one can say that in about a decade or so the role of money lenders in the supply of agricultural credit will be very insignificant. The progress in marketing is not as much as it should be. It seems that if problems of marketing and storage are solved satisfactorily, most of the difficulties in the field of agriculture will go away and it will be easier to make rapid progress in Gujarat State.

Shri Vimal Shah indicated various needs for the development of small scale and cottage industries in Gujarat State. It deserves our full consideration although point was made by one of the participants that the tendency on the part of the Government to provide employment for the sake of employment should be deprecated. We should give more employment with a view to increase the output in an economical way. Sometimes, small scale and cottage industries use more raw materials and also more capital proving themselves uneconomical from the point of view of use of all resources.

One of the participant also drew attention that while talking about rural planning it should not be viewed in isolation. As a matter of fact the

rural planning should be wellintegrated with the urban planning. In this context, it was also thought that the engineering aspects should deserve closer consideration, especially the problems of rural housing and rural roads should receive attention. Rural housing is the most acute problem and no amount of provision of funds by the centre would solve this question. In this regard we must see that all possible local resources are being utilised for this purpose. We must also see that the house design should be made such that it can be well integrated with the need of the rural people. About the use of the rural roads also the same could be mentioned. At present there is a indiscriminate use of the rural roads.

Shri V. L. Mehta in his presidential address indicated the history of our ideas regarding the rural planning since the Ooty seminar of the All India Congress. It was then realised that the rural planning in India will have to be rural orientated for many years to come. The president referred that despite 2 five year plans the income of the rural people has not increased. On the contrary, income of some of the sections of the rural areas has fallen down. The problem of employment instead of being solved has been intensified, and therefore, in the present context of our economy the rural planning seems to assume the greatest importance even from the point of view of research. He suggested that the rural planning is a very important field for research since it requires also an action to be followed after research, while in other fields after research, probably action is not so urgently required. He suggested that two main lines of action in the rural planning are Panchayati Raj in the field of politics and Sociology and cooperative organisations in the field of economics. These two steps are being taken in the 3rd five year plan and the success of the plan will depend on the success of these two important measures. In the end, he suggested that following the example of U. P. there is a need of establishing an institute for Research Planning and Action in Gujarat State. Organisation of the Gujarat State Research Workers will be the proper body to move into the matter. He put a stress on the need of making social experiments in the field of rural planning and suggested that the time is ripe to evolve a new type of society. It would be an answer to the problem which the world as a whole is facing to-day i. e. the problem of synthesising the good points of democracy, socialism, capitalism and communism.

Department of Economics,
Sardar Vallabhbhai Vidyapeeth,
VALLABH VIDYANAGAR
7th November, 1962

R K. Amin

વિભાગીય અધ્યક્ષીય વ્યાખ્યાન

શ્રી. વૈકુંઠભાઈ લ. મહેતા

ગુજરાત સંશોધન મંડળની સાથે સખંધ ધરાવતા ગુજરાતના સંશોધન કાર્યકરોની પરિષદનો એક વિભાગ “ગ્રામ-આયોજન”નો છે. સંશોધન મંડળના ઉદ્દેશો અને પરિષદનો હેતુ જોતાં “ગ્રામ-આયોજન” કેવું હોવું જોઈએ અને એને અંગે સાધનો કેમ પૂર્તિ પાડવા એ પ્રશ્નોમાં હું ઊતરવા માગતો નથી. આ વિભાગ અલગ રાખવામાં આવ્યો એ વિશે જરૂર કંઈક કહી શકાય. મહાત્મા ગાંધીજી કહેતા હતા કે હિન્દુ જીવન ગ્રામજીવન ઉપર નિર્ધારિત છે. તેથી ગાંધીજીના ગુજરાતમાં અને એ પણ અમદાવાદમાં સાબરમતી આશ્રમથી થોડે જ અંતરે મળીએ ત્યારે ગામડામાં અને એમાં વસતી પ્રજા વિશે વિચાર કરવો જોઈએ. પરંતુ હું માનું છું કે આવી ભાવનાને વશ થઈને વિભાગ ગોઠવવામાં નથી આવ્યો. હિન્દના દોષપણ લગમાં આવે અને હજી વર્ષો સુધી સંશોધકો, અર્થશાસ્ત્રીઓ, અથવા સમાજશાસ્ત્રીઓ, સર્વ પ્રાઇને ગામડા અને ગામડાંની પ્રજાના પ્રશ્નોના વિચાર કર્યા વગર ચાલે એમ નથી. શહેરમાં વસે છે તેથી ચાર ગણી પ્રજા ગામડાંમાં વસે છે અને દર દસ માણસમાંથી સાત માણસોના જીવનનો આધાર પણ ગામડાંમાં ચાલતા ખેતીના ઉદ્યોગ ઉપર છે. રાષ્ટ્રીય આગકનો લગભગ અડધો હિસ્સો ખેતી તથા ખેતી સાથે જોડાયેલા ઉદ્યોગ ઉપર છે. આથી સ્પષ્ટ દેખાય છે કે ગ્રામજીવન ઉપર દેશની પ્રગતિનો કેટલો મોટો અંશે આધાર છે.

ત્રીજી પંચવર્ષીય યોજના ઘડાતી હતી તે સમયે ત્રણ વર્ષ ઉપર ઈંગ્લેન્ડ તરફથી એક પરિ-સંવાદ (Seminar) ઓટાકામંડ (Ooty)માં યોજવામાં આવ્યો હતો. જ્યાં કેએસના હોફમેસ્ટર ઉપરાંત નિયોજન પંચના અધ્યક્ષ, ઉપાધ્યક્ષ તથા કેટલાક કેન્દ્રીય સરકારના મંત્રીમહાશયો હાજર હતા. આ પરિસંવાદની આખરે જે નિવેદન જહાર પાડવામાં આવ્યું હતું કે તૃતીય પંચવર્ષીય યોજના ગ્રામ-લક્ષીય (Rural-reorientated) હોવી જોઈએ. આ મુચનનો જાનિ આપણી ત્રીજી યોજનાના નિવેદનમાં છે. ઔદ્યોગીકરણનો એક આપવા સાથે ખેતીઉત્પાદન વધારવા બાંધત અને ગામડાંમાં કામ પૂરું પાડવા બાળન દીક દીક લક્ષ આપવામાં આવ્યું છે. ગામડાંની આબાદીનો અધાર નેટલો ખેતીનું ઉત્પાદન વધારવા ઉપર છે તેટલો ગ્રામીણ અર્થકરણ હાલ મુખ્યત્વે એકાંગી છે તેને બદલે અનેકવિધ અથવા વિવિધલક્ષી (diversified economy) બને એના ઉપર છે એ મુદ્દો હવે સામાન્યતાં સ્વીકાર્યો છે : એમ હું માનું છું.

આ બન્ને ક્ષેત્રો માટે આયોજન ઘડાયેલ છે, પણ એમાં શો ઉમેરો થઈ શકે, એને શું વલણ આપવાની જરૂર છે. એ કેવા પ્રકારની દુરસ્તી માગે છે, એનો લાભ પ્રાપ્તને ધાર્યા પ્રમાણમાં કેમ મળે, એમાં જનતાનો સાથ વિશેષ કેમ મેળવી શકાય, આવા અનેક પ્રશ્નો (ત્યાંસુધી આપણી નિયોજનની ભાષામાં બોલીશું ત્યાંસુધી) પ્રજા સમક્ષ-ગંભ્ય સમક્ષ ગણા રહેશે. એ અંગે નિર્ણય લેવાય તે અગાઉ અવશ્યક છે કે શાસ્ત્રીય પદ્ધતિથી યોજાણી, મૂલ્યાંકન, નિરીક્ષણ તટસ્થ રીતે થવું જોઈએ. આ પ્રકારના શાસ્ત્રીય પાણ વ્યવહારુ સંશોધનની અસર આયોજન ઉપર થવી જોઈએ. તેથી યોગ્ય જ છે કે ગુજરાત સંશોધન મંડળ આ વિશેષ ક્ષેત્રમાં આર્થિક સામાજિક તથા વૈજ્ઞાનિક સંશોધન કાર્યક્રમનો વિચાર કરે.

સંશોધનનું ક્ષેત્ર વિશાળ છે, એટલે પહેલવહેલી સંશોધન મંડળ જેવી સંસ્થાએ કાંઈક મર્યાદા બાંધી દેવી જોઈએ કે શા પ્રશ્ન ઉપર વિશેષ લક્ષ આપવું ઘટે છે. ઉદાહરણાર્થે ગુજરાતમાં આદિવાસીઓની વસ્તીનું પ્રમાણ મોટું છે. અમદાવાદ, ખેડા, અને સૌરાષ્ટ્ર તથા કચ્છ છોડી દૃષ્ટએ તો ભાગ્યે કંઈ જિલ્લો હશે કે જ્યાં સારી સંખ્યામાં આદિવાસી વસતા ન હોય. આદિવાસીઓના જીવનનું ધોરણ ખીજી ગ્રામીણ જનતા કરતાં ઘણું નીચું છે વળી એ પ્રજા શોષણના વાતાવરણમાં જ ઘણે ભાગે જીવન ગાળે છે માનનીય શ્રી. ઢેગરભાઈના પ્રમુખપણા નીચે Scheduled Areas and Scheduled Tribes Commission ના રિપોર્ટમાં અનેક સૂચનો તથા ભલામણો આ પરિસ્થિતિ ટાળવા માટે કરવામાં આવેલ છે તેનો લાભ ગુજરાતના આદિવાસીઓ સારી રીતે લે એ સારું આવશ્યક છે એ જુદા જુદા પ્રદેશમાં મોજણી ચોગ્ય રીતે થવી જોઈએ. અને પ્રાદેશિક (area) જરૂરિયાતો જુદી જુદી છે કે કેમ એનો વિચાર થવો જોઈએ.

ખીજો પ્રશ્ન, દાખલા તરીકે જ લઈએ તો, માલધારીઓનો છે. રખારી કામ જે અમદાવાદ અને નજીકના જિલ્લાઓમાં ઢોંગઉછેરના કાર્યમાં રોકાયેલ છે તેની વિશેષતા છે તેની જ વિશેષતા સૌરાષ્ટ્ર અને કચ્છના કેટલાક ભાગમાં માલધારીઓની છે. સામાન્ય ગ્રામજનતા કરતાં એમનાં હિત-અહિતના પ્રશ્નો જુદા પ્રકારના છે. એમની સ્થિતિ સુધારવા બાબત આજે પણ કેટલીક યોજનાઓ ઘડાઈ છે, પણ મને ખ્યાલ છે ત્યાંસુધી શાસ્ત્રીય પદ્ધતિએ આ પ્રશ્નનું નિરીક્ષણ થયું નથી.

સંશોધનની દિશા નક્કી કર્યા પછી પ્રશ્ન વિચારવાનો રહે છે કે મોજણી મૂલ્યાંકન, નિરીક્ષણનું ભૌગોલિક ક્ષેત્ર શું હોવું જોઈએ. માહિતી એકઠી કરવાની હોય તો એ અવશ્ય આખા રાજ્યની થઈ શકે. તો એ સંશોધનકારની પ્રાથમિક સામગ્રી છે, પણ આયોજનની દૃષ્ટિએ જો સંશોધન કરવું હોય તો એ માટે ક્ષેત્ર કાંઈક મર્યાદિત હોવું જોઈએ એમ સામાન્ય માનવામાં આવે છે. દાખલા તરીકે શાસ્ત્રીય સંશોધનને આધારે જમીન-ધોવાણુ અટકાવવા (anti-soil erosion) નો કોઈ કાર્યક્રમ અગર યોજના ધડવામાં આવે તો એ સહુ કોઈ પ્રદેશને એક જ ઢાંચે લાગુ કરી શકાય નહિ. તેથી આજે એ તો સામાન્ય મતધારણ કરવામાં આવેલ છે કે આયોજન પ્રાદેશિક હોવું જોઈએ એટલે જોને area planning કહે છે એવા સ્વરૂપનું હોવું જોઈએ. આવું નિયોજન કોઈ મોજણી તથા સંશોધનને આધારે થાય એ સ્પષ્ટ છે.

ત્યારબાદ ઠરાવવાનું રહે છે કે આવી મોજણી-સંશોધન કરવાની જવાબદારી કોણ ઉપાડે. ફક્ત માહિતી એકઠી કરવાનું કામ હોય તે તો સુગમતાથી રાજ્યતંત્ર તરફથી થઈ શકે એમાં સંશય નથી. મૂલ્યાંકન અથવા નિરીક્ષણનું અને વિશાળ દૃષ્ટિથી મોજણીનું કાર્ય પણ સરકારી અધિકારી તરફથી કરવામાં આવે છે. પરંતુ કેટલા સમયથી નિયોજન પદ્ય સ્વીકારે છે કે સંશોધનનો કાર્યક્રમ (research-programme) ઉપાડી લેવામાં બિનસરકારી સંસ્થાઓનો સાથ સાધવો જોઈએ. વિદ્યાપીઠો, વિદ્યાલયો, સંશોધન મંડળો અને એવી સંસ્થાઓ નિરીક્ષણની જવાબદારી લે એ ઇચ્છવા લાયક છે, કારણ કે એ તટસ્થ રહી તપાસ કરી શકે છે. સ્પષ્ટતાથી મત પ્રદર્શિત કરતાં એમને સંકાય નથી લાગતો. આવું કામ ઉપાડી લેવા સરકાર તરફથી આર્થિક મદદ સારા પ્રમાણમાં ન મળે તો આજના સંજોગમાં એવું કામ વધતા પ્રમાણમાં કરવું આપણા દેશમાં લગભગ અશક્ય છે. અમેરિકા જેવા દેશોની પરિસ્થિતિ જુદી છે. ત્યાં તો ખાનગી ભંડોળો (foundation) આવા કામ માટે ઉપયોગી થઈ પડે છે. એક જ સંસ્થા સહુ કોઈ સંશોધનની

જવાબદારી લે એ ઇચ્છવા જોગ નથી. પણ જુદી જુદી સંસ્થાઓ દામ ઉપાડી લે ત્યારે એઓના દામમાં કોઈ એકીકરણ અથવા સમન્વય હોવાં જોઈએ. આ પ્રકારનો સમન્વય ગુજરાત પૂરતો યોજવામાં ગુજરાત સંશોધન મંડળ પહેલ કરે એ ઇચ્છનીય છે.

ગુજરાત સંશોધન મંડળના આજ સુધીના ઇતિહાસ ઉપરથી જણાય છે—કે દેટલાક સંશોધનને અંગે જે મુદ્દાઓ વિશે નિર્ણય લઈ શકાય એમ હોય તેને અમલમાં લાવવાનું કાર્ય પણ કોઈ ક્ષેત્રમાં ગુજરાત સંશોધન મંડળ ઉપાડી લે છે. આ સ્તુત્ય પગલું છે. છતાં સંશોધનના કાર્યનો વ્યાપ વધે અને ક્ષેત્ર ખરોળું થાય તેમ તેમ વિશેષ અસંલવિત છે કે એવી જવાબદારી સંશોધન મંડળ સદેલાઈથી ઉપાડી ન શકે. ગ્રામ-આયોજન પૂરતો આ પ્રશ્નનો વિચાર કરીએ તો એમ લાગે છે કે સ્વીકારેલ મુદ્દાઓ અમલમાં લાવવા કંઈક વિશેષ વ્યવસ્થા હોવી જોઈએ, જેનો રાજ્યતંત્ર સાથે નિકટનો સંબંધ હોય. એમ થવાથી પૂરતી આર્થિક મદદ મળતી રહે, એટલું જ નહીં, પણ રાજ્યના (જેની અંદર પંચાયતી રાજ્યનો સમાવેશ થાય છે) વહીવટીતંત્રનો ઉપયોગ સરળતાથી થઈ શકે.

દેટલાક સમય અગાઉ આ હેતુથી ઉત્તર પ્રદેશમાં રાજ્યતંત્ર સાથે જોડાયેલ સંસ્થા સ્થાપન કરવામાં આવી કે જેનું કાર્યક્ષેત્ર સંશોધન કરવાનું અને એને આધારે અમલ કરવાનું છે. The Planning Research Action Institute એ લખનૌની નજીકના પ્રદેશમાં ઉત્તમ કામ કરી રહેલું છે એનો મને અગત અનુભવ છે. સંશોધનને આધારે જનાવેલા કાર્યક્રમને અને પ્રયોગકેન્દ્રોને સારી સફળતા પ્રાપ્ત થઈ છે. આવો ઉદ્દેશ ધરાવતી સંસ્થા સ્થાપવામાં ગુજરાતની સરકાર મદદ કરે તો એનો ફાયદો ગ્રામ આયોજનના કાર્યને સુવ્યવસ્થા જનાવવામાં, એનો વ્યાપ વધારવામાં અને એને વેગ આપવામાં કિંમતી થઈ પડે.

છેવટે એક જ વસ્તુ ઉપર ભાર મૂકવાનો છે. સંશોધન કાર્યનું મહત્ત્વ જૌદિક શક્તિનો વિકાસ કરવાનું અથવા પરિસ્થિતિનું દિગ્દર્શન કે નિરીક્ષણ કરવાનું જ નથી, સંશોધનને આધારે ઘડવાના મુખ્ય હેતુ છે કે જેથી યોજનાને પરિણામે પ્રજાનું કલ્યાણ આપણે સાધ્ય કરી શકીએ. સંશોધનકારો અવશ્ય સત્યનું અન્વેષણ કરે, પણ સાથે સાથે એમણે સંવેદન અને સદાનુભૂતિની લાગણી પણ ડેળવવી જોઈએ, કારણ કે એનો આધાર ન લેવામાં આવે તો સંશોધન દુષ્ટ અને અર્થરહિત રહેશે. સંશોધન ‘અહુજનહિતાય’ ન અને તો એની પાછળ રાષ્ટ્રીય શક્તિ કે સંપત્તિ શા માટે ખર્ચવી એ વિશે રૂંચાય રહે છે.

THE NATIONAL COUNT

Syt. R. K. Trivedi

Retrospect :

"Presume not God to scan.

Proper study of mankind is man."

— Pope —

True to this motto, Census in India has since its inception attempted the study of the varied aspects of the life of the people of this country. It is a national stock taking held at an interval of every ten years, when an estimate of the

demographic, economic, sociological and anthropological condition of the people has been made. Multipurpose in its aim and application, the Census has its roots in this country even in the distant past when enumeration of the people was in vogue in India, as appears from the *Artha Shastra* of Chanakya, the talented minister of the Great Maurya Emperor, Chandragupta, and the diaries written by foreign travellers. The scope of this enumeration was, however, limited, owing to the difference in the objective in view. For, a population Census was at that time undertaken either for recruitment to the army or for the purposes of tax collection. Naturally, therefore, there is a world of difference between the aims and objects of the scientific and systematic method of Census taking which is being practised today and the count which was carried out in the past.

These days, a population Census is invariably undertaken every 10 years not only in India but also in the most of the countries of the world. United Nations Organisation has been trying to ensure that the population Census is carried out on a uniform basis all over the world, be it in the backward or underdeveloped countries of the world, where Census is either not yet introduced, or where introduced, it does not collect all the information likely to be useful for the social, economic and cultural development of a country.

Coverage since 1872 :

The first Census of the country was taken in 1872, but its coverage was not complete. Regular census taking started from 1881. This has been repeated every ten years providing the most complete and continuous demographic record and yielding more profitable comparability over time in many fields than commonly imagined. Thus, the Census of 1961 was the tenth but second for India after Independence and the first for the State of Gujarat.

The popular notion about the Census is that it is a demographic study of the people, concerned with mere counting of heads and that its connection with the social and economic aspects of their life is remote. This belief is not in conformity with the results the Census has yielded decade after decade. For, in addition to the demographic data that it collects, information relating to the social and cultural condition of the society as revealed by the statistics relating to marital status, mother tongue, literacy and education on the one hand, and economic data relating to the means of livelihood of the people on the other have been one of the most important items of the Census study. But, that is not all. The scope of the Census Operations has been further in this country since its introduction by undertaking in connection therewith a number of special investigations designed to study the sociological and anthropological aspects of the population.

The particulars of census questionnaire since 1872 given in Appendix 'A' will go to show that the Census of 1881 was a great step forward towards a

modern synchronous and comprehensive operations in which much effort was spent not only on more complete coverage but also on classifying all demographic, economic and social characteristics of the people. While indeed a very large and valuable scope for anthropological literature has grown round the Indian Census, it has always been primarily concerned with its legitimate task of demographic analysis and economic classification, of mathematical manipulation and even statistical ingenuity. As is well known, the age and life tables which has to be prepared in India out of inadequate and often very unsatisfactory material have presented the world with valuable devices for construction of such tables. The Indian Census has never been bound hand and foot to tradition, never taken shelter behind an official wall of infallibility, but has broken new ground at every census without losing comparability with previous censuses. Thus it represents the most fruitful single source of information about the country and census reports contain demographic, economic and social data compiled at an interval of every ten years.

Period of Enumeration :

From 1872 to 1931, the Census was only a one-night affair when the enumerators went round from house to house on the census night throughout the country and collected information on the prescribed questionnaire. This procedure entailed a heavy workload on the enumerators to fill in the census schedules. This practice was, however, departed from in 1941 when the period of enumeration was extended to three days instead of one. A further and more significant departure took place in 1951 and continued in 1961, when the enumeration was spread over a period of 19 to 21 days prior to the reference date fixed for the final count, whereafter a period of four to five days was provided for supervisory round to check up the correctness of entries made in the schedules and make adjustments with regard to births and deaths, taking place between the preliminary and the revisional rounds. Such a procedure obviated the necessity of special enumeration of persons moving in trains or travelling by bus or boat when the census was a one-night job. This is not necessary now as, since 1951, the enumeration is spread over nearly three weeks, during which period all the normal residents living in the households are enumerated—beggars, vagrants, footpath dwellers and other houseless persons being counted on the census night either in their ordinary rendezvous or by collecting them at selected centres determined in advance. This change in the procedure of enumeration adopted in the past has enabled the Census Organisation to collect accurate details about every individual, reduce the workload on the enumerator and improve the quality of the census data.

Evolution of Census Schedules :

The census questionnaires from 1872 to 1961 are given in Appendix 'A' with a view to give an idea of the progressive improvement brought about in the census schedules.

Till 1931, the data in respect of each individual was recorded in a straight line below the various columns of the questionnaire provided in a statement in the form of a register to be filled up by the enumerator. This procedure necessitated the transferring of all the entries in the census schedule to separate slips after they were received in the Abstracton office before the processing started. The innovation, however, introduced since 1941 of making the entries directly on the slip, one each for every individual, enabled the Tabulation office to proceed forthwith with sorting operations. The slips of 1941 and 1951 showed mere numbers of the questions without giving their description. The result was that the enumerator had to make frequent references to the handbook of instructions for ascertaining the exact nature of the question to be put and the reply to be recorded. This difficulty was removed in 1961 when a short description of the question was given along with its number on the enumeration slip itself. This improvement has very much facilitated the task of the enumerator and also ensured correctness of the entries made.

Census of 1961 :

The Indian Census has passed through a unique process of evolution from census to census, when its contents have been progressively modified to meet the statistical needs of this country. This will be evident from the census schedules brought into use at each successive census since 1872. The importance and urgency of collecting very comprehensive data with regard to the demographic and socio-economic condition of the people of India has been never greater than it has been since the Independence of the country. Further, the 1961 Census as it does at the end of the Second Five-Year Plan and the commencement of the Third will prove very useful in assessing the progress made by the nation during the last decennium and will also furnish very valuable information essential for the formulation of the Third and subsequent Five-Year Plans. Keeping this end in view, the Registrar General, India, framed for the Census of 1961 a very ambitious tabulation programme by adding a number of new features and a large variety of statistical data as will be seen from Appendix 'B' giving details of the different series of tables the Census of 1951 has compiled. Briefly stated, as against 21 tables compiled in 1951, the 1961 census will publish as many as 47 tables, 4 of which will be on General Population, 8 Social and Cultural Tables, 16 Economic Tables, 5 Migration Tables, 9 special Tables for Scheduled Castes and Scheduled Tribes and 5 Housing Tables.

1961 Census Schedules :

The basic documents, however, from which all this material has been available are the various census schedules introduced at the 1961 census. This time, 3 census schedules have been prescribed under the Census Act, viz. (1) Houselist, (2) Individual Enumeration Slip and (3) Household Schedule. The

details of these schedules which are discussed below will give a comprehensive idea of the nature of material collected and some of the important concepts introduced during the 1961 census.

Houselist :

With a view to ensure complete coverage and equitable distribution of work amongst the enumerators, it was usual in the former Censuses to list out all houses with their numbers and names of Heads of Households prior to the taking of the census count. This was purely an administrative act upto 1951. However, during 1961 Census a comprehensive schedule for collecting detailed information regarding each census house, census household, industrial establishments, factories and workshops, formed part of the statutory census operations. The Houselist Form which has been thus brought into vogue throughout the country on a uniform basis during the 1961 Census has recorded data on housing such as material of wall and roof, number of rooms in a census household and of persons residing therein as well as essential data relating to establishments, workshops and factories, such as name of the establishment or proprietor, name of products, number of persons working and the kind of fuel or power, if machinery is used. Such an inquiry which is the first of its kind and which perhaps no other country has so far attempted, has been commended by the third Session of the Conference of the Asian Statisticians of the ECAFE Region held in April 1960 as filling in the gap in the industrial statistics available to countries in the region on the character and level of activities of smaller establishments. The Housing Census of 1961 will, therefore, provide certain basic information on the structure of industrial segments and also furnish a frame for selecting samples of industrial establishments for carrying out further survey and research.

Evolution of the concept of a 'Census House' :

Owing to the diversity of local conditions, it was not possible in the past to lay down a uniform definition of a 'Census House' common to all parts of the country. The definition adopted till the Census of 1941 had two fold connotation which emphasised either (i) the structural aspect, i.e., building or house, or (ii) the social aspect, i.e. family or household. The former was defined as the residence of one or more families having a separate and independent entrance from the common way. But the social aspect was emphasised by defining a 'Household' as the home of a composite family with its resident dependents and servants. From 1881-1941, the Census Superintendents adopted the one or the other definition according to their convenience. A clear distinction was, however, drawn between a 'Census House' and a 'Census Household' in 1951, which gave a uniform meaning to the terms 'Census House' and 'Census Household' which was distinguished as a 'Family Unit'. The 'Census House' was defined as "a dwelling with a separate main entrance"

and the 'Census Household' as "all persons who live together in the same house and have a common mess".

Though the definition of a 'Census House' introduced in 1951 has been continued during the Census of 1961, it differs from that adopted by the 1961 Census, in that the latter is broad-based to include non-dwellings also. The houselist will thus be an inventory of all structures or part of structures with a separate entrance.

Individual Enumeration Slip :

The following items of information have been collected in the Individual Enumeration Slip, the fascimile of which is given as Appendix 'C'.

- (1) Name,
- (2) Relationship to the Head of the Household,
- (3) Age as on last birthday,
- (4) Marital status,
- (5) Place of birth,
- (6) Where born in rural or urban areas,
- (7) Period of residence in the place of enumeration, if born elsewhere,
- (8) Nationality,
- (9) Religion,
- (10) Whether Scheduled Caste or Scheduled Tribe,
- (11) Literacy and Education,
- (12) Mother tongue,
- (13) Any other language(s) known,
- (14) Occupational particulars,
- (15) Nature of activity if a non-worker, and
- (16) Sex—male or female.

The occupational particulars collected in the individual slip specified—

- (a) whether working as a cultivator;
- (b) whether working as an agricultural labourer;
- (c) whether working in a household industry and, if so, the nature of the work, nature of the industry and whether working as an employee;
- (d) whether engaged in any occupation other than those mentioned above and; if so, the nature of the occupation, the nature of the industry, business, trade or profession, the class of worker and the name of the shop, firm or institution in which working.

These details have been helpful in tabulating a wealth of economic data relating to the industrial structure and occupational pattern of the people

In the past censuses only birthplace returns were available for the study of migration. With a view to ensure detailed study of the trends of migration, two questions on migration have been inserted as under :

1. whether the place of birth is rural or urban, and
2. if the person was born outside, the duration of residence of the person in the place of enumeration.

The concept of income or dependency adopted at the earlier censuses had a tendency to suppress the important sector of workers engaged in agriculture and traditional cottage industries. It was, therefore, decided to replace the concept of earners, self-supporting persons, earning dependents, etc., by adopting the concept of worker as distinguished from non-worker. Following two questions have been inserted for the purpose :

1. to ascertain whether the individual was working or not working, and
2. the activities of an individual who was not working were specified under the following 8 categories :
 - (a) Full time students doing no other work;
 - (b) Housewives or other adult females doing no other work except domestic duties or earning for own family children;
 - (c) Infants and other dependents doing no other work;
 - (d) Retired persons doing no work again, receivers of agricultural or non-agricultural rent, royalties or dividend;
 - (e) Beggars, vagrants, independent women without indication of source of existence, persons and others of unspecified source of existence;
 - (f) Inmates of penal, charitable, and mental institutions;
 - (g) Persons seeking employment for the first time;
 - (h) Persons employed before and now out of employment but seeking work.

It will be seen from the contents of the individual slip that significant changes have been made in the questionnaire.

Household Schedule :

Household schedule (Appendix 'D' introduced for the first time in 1951 census has been filled up for every household and individual slip for every member of the household. The unit of economic activity in India is a household rather than individual. It has therefore been considered desirable to collect information on household cultivation and household industry for households engaged in such activities in which major part of the population is engaged. The household industry has been defined as "an industry (not on the scale of registered factory) conducted by the head of the household himself and/or mainly members of household at home or within the village in rural areas and only at home in the urban areas." Thus it is a simple definition acceptable to all levels of intelligence and great emphasis has been laid on participation of the head of the household and/or members of the household. The household business has been excluded. In the portion pertaining to cultivation, the local names of rights on land along with the land under cultivation by the household, whether owned or held from Government or as tenant, have been recorded

specifying their extent in acres. Land, if any, given to other persons for cultivation has also been entered separately. As regards household industry, enquiries have been made whether the household is carrying on any household industry or not and, if so, its nature as well as the number of months in the year during which it is conducted. In addition to this, the number of members of the family as well as hired workers, if any, working in cultivation and/or household industry has also been recorded. Part II of the Household Schedule which replaces the National Register of Citizens of 1961 contains information as to the name of each individual enumerated along with sex, age, relationship to the head of the household, marital status and the description of the work in case of workers. The data collected in household schedules have been processed mechanically for the first time and special tables of economic activities followed by households compiled. These details are likely to prove very valuable and perhaps unique in its importance to economists, scholars and Government departments.

SPECIAL STUDIES

True to the tradition laid down by the Indian Census in the past, the Census of 1961 has, along with the population census, organised the following important surveys and special studies which will throw useful light on the social and economic structure of society in this country:—

1. Socio-economic enquiry of 41 selected villages;
2. Survey of Handicrafts;
3. Fairs and Festivals;
4. Study of the Scheduled Castes and Scheduled Tribes of Gujarat;
5. Sex and fertility.

1. Socio-economic enquiry of selected villages :

India lives in villages which form the bulk of the territory and population of this country. Investigations into the diverse aspects of the social and economic life of the people living in rural areas through socio-economic survey of selected villages is obviously the most fitting and appropriate subject which should find a prominent place in the programme of special studies, the current Census has organised. For, the solution of some of our acute problems lies in the solution of problems facing the rural population. It, therefore, becomes imperative for us to study the social and economic condition of villages, particularly of those villages which are backward and situated at places which are so far devoid of means of communications. Keeping this objective in view, 2-3 villages from a district—41 in all—have been selected for socio-economic inquiry in Gujarat. They include:—

- (a) villages from forest areas,
- (b) villages outside the forest areas but inhabited by Adivasis,

- (c) villages with typical rural industry,
- (d) villages representing different stages of cultivation and soil fertility,
- (e) villages where some sort of socio-economic enquiry was conducted in the past with a view to compare the progress, if any, made during the interregnum,
- (f) villages in the vicinity of urban areas to assess the impact of urbanisation.
- (g) villages mainly inhabited by cattlebreeders and graziers belonging to communities like Rabari. Aher, etc.

Consanguineous Marriages :

As a part of the Socio-economic Survey of selected villages special schedules on consanguinity of marriages have also been devised and canvassed in consultation with the Human Variation Unit of the Indian Cancer Research Centre, Bombay. This Survey is likely to throw important light on the genetic constitution and the incidence and pattern of the various marriage relationships found in different parts of the country.

2. Survey of Handicrafts :

Gujarat has a rich heritage of rural crafts. Even in the present day economy and the circumstances of our social structure, the household industries play an important part. It is for this purpose that the household schedule introduced for the first time during the 1961 Census is designed to contain information pertaining to household industries in addition to cultivation. The Census statistics thus collected has been supplemented by descriptive information about some of the principal and important household industries and crafts, communities engaged therein, their products, different processes through which they pass, raw materials used, sources of their supply, arrangements available for their marketing, etc. A special enquiry has been instituted for this purpose and its results will be published in a separate volume

3. Fairs and Festivals :

The culture of a community or people is reflected in the fairs and festivals they celebrate. Indian culture is interwoven mainly with religion and expresses itself through the form their religious festivals take. Although our fairs are on the main linked with religious festivals, products of the neighbouring areas are also marketed such fairs. Information pertaining to fairs and festivals of Gujarat has, therefore, been collected during the 1961 Census with a view to obtain a picture of this important side of the life of our people.

4. Scheduled Castes and Scheduled Tribes :

These casts and tribes have an entirely different culture all their own. Their customs, mode of living, day-to-day life, religious beliefs, social structure, etc., make very interesting study. In view of the special status they have acquired under the Constitution, it was decided to collect information about the scheduled Castes and Tribes of the State in a separate questionnaire designed

for the purpose. Monographs on the Scheduled Castes and Tribes of Guja will be published in a separate volume which also includes some of the important minor tribes and ex-criminal tribes of the State.

5. Sex and Fertility :

Correct records of births and deaths are sadly lacking in this country and whatever the data available are not reliable. It is, therefore, difficult to ascertain the rate of birth and death in a State. The age returns by sex compiled at the time of the Census are now studied by an actuary who computes the rates of birth and death for different States on which the trends of future growth of population are based. Special study by on-the-spot survey in separate schedules devised for the purpose and of records maintained in the hospitals and maternity homes has also been made. As a result of this enquiry along with the 1961 Census, information as to the age of the mother at the time of birth of different children, sex of the child, whether still born or alive, etc., has been collected from :

- (i) individual households,
- (ii) registers maintained in hospitals, and
- (iii) records of births in the principal hospitals and maternity homes in the State over a period of 4 months commencing from 1st November 1960.

District Census Handbook :

The District Census Handbook published for the first time in 1951 is a unique achievement of the Indian Census giving as it does the population and their statistical data for every village in the State. The utility of the Handbook as an important book of reference has been recognised by all, the general public as well as the administration. The scope of the District Census Handbook has, therefore, been much enlarged in 1961 so as to include all the important statistical data and other useful information pertaining to the villages. It will contain:—

- (i) Brief descriptive introduction to the district
- (ii) All important census tables down to taluka
- (iii) Important departmental statistics
- (iv) Village Directory containing the Primary Census Abstract for each village or an urban block in City/town group/town
- (v) Details of handicraft tables
- (vi) Details of special tables for Scheduled Castes and Scheduled Tribes
- (vii) Brief gazetteer of place names
- (viii) Alphabetical glossary of villages
- (ix) District and Taluka maps

The Village Directory will furnish information on area, occupied houses, households, total population, population of Scheduled Castes and Scheduled

Tribes, number of literate and educated and primary economic activity classified into nine industrial categories and non-workers. The information is furnished for each village/ward of a town and also for each enumerator's block in a town consisting of about 120 houses. It will have, in addition, certain useful information on selected essential topics such as educational institutions, medical and public health facilities, drinking water supply, rural electricity, post and telegraphs offices and telephone facilities in respect of each village.

Unique Feature of 1961 Census :

The 1961 Census has introduced a number of new features, for the first time. They are :

(1) Block Maps :

Sketch maps or national maps showing the jurisdiction of every block assigned to an enumerator were prepared and given to him for guidance, so that he had a complete idea of the area of enumeration under his charge. Apart from fixing the responsibility of each individual enumerator, the block maps further helped to ensure that not a single house was left out of enumeration.

(2) Uniform Houselisting and Housing Tables :

As already noticed, this is quite a new feature introduced by the Census of 1961 to remove the serious handicap to our knowledge about housing condition and fill in the gap in the industrial statistics by supplying essential data relating to the character and level of activities of industrial establishment as well as elementary information relating to the structure of industrial segments in the country.

(3) Household Schedule and Census Population Record :

Cultivation and household industry are the principal economic activity of the people of this country for which fuller and detailed data have been collected for the first time in the household schedule. Data relating to (i) land under cultivation by the household, (ii) nature of household industry and the number of months in the year during which conducted and (iii) workers at cultivation only or at household industry only or both with sex break-up for working members of the family and number of hired workers if any, have been collected in the household schedule. The Census population record at the back of the schedule which replaces the National Register of Citizens gives essential information for every individual for whom an enumeration slip has been filled in.

(4) B-II Series Economic Tables :

Considering each part as a separate table, this series will add eight new tables based on the tabulation of the data relating to cultivation and household schedule. These tables along with Table C-I relating to size and composition of households are prepared by mechanical tabulation on the basis of 20 per cent sample.

(5) Industrial and Occupational Classification :

In 1951, the economic classification was confined to the eight livelihood classes with stress on income rather than work or economic activity of the individual. During the Census of 1961 the basis of income has been replaced by the concept of work, which has been broadbased so as to include a large number of family workers who are not in receipt of any income, as well as working children who cannot earn enough for their maintenance. This change in concept will help obtain a realistic picture of the economic activity of those important sections of household workers who were left out of account in the past.

Another noteworthy and special feature of the general economic tables is the systematic classification of industries and occupations. For, the one introduced in 1951 was as truly pointed out by the Registrar General, neither a purely industrial nor occupational classification of the population but was a combination of both. The National classification of Industries and occupations adopted by the Government and followed on the present occasion will classify the economic data into nine divisions, 45 major groups and 343 minor groups of industries and 11 divisions, 75 groups and 331 families of occupations as against a conglomeration of 10 divisions and 88 sub-divisions of services in 1951.

(6) Special Migration Tables :

(i) Tables D-III and D-I added for the first time will give a clear picture of trends and volume of migration between rural and urban areas of the State.

(ii) A number of special tables compiled after special sorting undertaken for the purpose will provide useful information regarding the currents of migration in the City of Ahmedabad and various industries, trade and commerce which attract a large number of migrants seeking skilled and unskilled employment from different places within and outside the State.

(7) Tables for Scheduled Castes and Scheduled Tribes :

No special tables were prepared for Scheduled Castes and Scheduled Tribes in 1951. The only information that Table D-III of 1951 furnished was the aggregate strength of scheduled castes and tribes for the districts and certain groups of talukas. In view, however, of the special safeguards provided for these classes under the Constitution, it was felt that a more detailed tabulation of the Census data will furnish the basis necessary for the evaluation of the results of the various schemes implemented by the State under the Five Year Plans as also for the formulation of new ones. Special tables for Scheduled Castes and Scheduled Tribes have, therefore, been devised and presented in a separate series called SCT/SC/ST series. These tables give very valuable information relating to the population of each Scheduled Caste and Tribe, their classification by age, marital status, level of education and economic activity industrial as well as occupational.

(8) Age Classification :

In 1951, the age tables were prepared on the basis of 10 per cent sample. In 1961, they have been prepared on the basis of full count which adopts the quin-quennial age groups recommended by the United Nations for population censuses.

(9) Classification by Educational Standards :

Classification of literacy statistics by different age-groups and broad educational levels which are separate for the rural and urban areas is a new feature of the Census of 1961. This refinement will be of great help in studying the growth of literacy and spread of adult education since 1951.

(10) Enumeration of Technically qualified personnel :

A special census of technically qualified persons holding either degrees or diplomas equivalent to degrees has also been taken along with the 1961 Census, in all urban areas and selected rural areas of the State. A special enumeration card which was a prepared business reply card was left in each such household at the time of enumeration for being filled up by the technically qualified persons and collected by the enumerator at the time of the revisional round between the 1st and 5th March, 1961, or later posted, by the person concerned.

(11) Classification of non-workers :

One of the special features of tabulation of 1961 Census economic tables is separate classification of the activity of non-workers. The eight categories into which the non-working population has been classified have already been explained before in the brief instructions on enumeration.

(12) Atlas Volume :

To the unique features of 1961 Census listed above must be added the Atlas Volume which will be published for the first time with a large number of maps based on Census and official statistics depicting the various aspects demographic, economic, social-cultural of the population and developmental activities of the State.

APPENDIX "A"

1872

1. Number of Houses, whether terraced, tiled or thatched
2. Names of Males
3. Age
4. Religion
5. Caste or Class
6. Race or Nationality or Country of Birth
7. Occupation

8. Youths upto age 20 attending School, College or under private Tuition
9. Able to read and write
10. Name or Designation of Females
11. Age
12. Religion
13. Caste or Class
14. Race or Nationality or Country of Birth
15. Youths upto age 20 attending School, College or under private Tuition
16. Able to read and write
17. Remarks showing number of Males and Females, blind, deaf, dumb, insane, idiots or lepers

1881

1. Serial Number of each inmate
2. Name
3. Condition i. e., whether married, unmarried, widow or widower
4. Sex
5. Age last birthday
6. & 7. RELIGION
6. Religion
7. Caste, if Hindu; sect, if of other religion
8. Mother tongue
9. Place of birth
10. Occupation of men, also of boys and females who may do work
11. EDUCATION :
 1. Under instruction
 2. Not under instruction, but able to read and write
 3. Not under instruction, and not able to read and write
12. INFIRMITIES :
 1. Unsound mind
 2. Deaf-mutes from birth
 3. Blind
 4. Lepers

1891

1. Serial number and name
2. Religion
3. Sect of Religion (see Rule 3)
4. Caste of Hindus and Jains, Tribe or race of others (see Rule 4)
5. Sub-division of caste, & c (see Rule 5)
6. Male or Female
7. Age

8. Married, unmarried or widowed
9. Parent-tongue
10. Birth-District, Province or country (see Rule 10)
11. Occupation, or means of subsistence („ 11)
12. Learning, literate, or illiterate
13. Language known by literate (see Rule 13)
14. If any person be insane, deaf-mute from birth, totally blind or a leper, enter that person as such below.

1901

1. House Number
2. Serial Number
3. Name
4. Religion
5. Male or Female
6. Married, unmarried or widowed
7. Age
8. Caste of Hindus & Jains, Tribe or race of others
- 9.&10. Occupation or Means of subsistence of actual workers
9. Principal
10. Subsidiary
11. Means of subsistence of Dependents on Actual Workers
12. Birthplace
13. Language ordinarily used
14. Literate or illiterate
15. Know or does not know English
16. Insane, deaf-mute from birth, totally blind or leper

1911

1. Census number painted on the house
2. Serial number of persons enumerated
3. Name
4. Religion (and sect of Christians)
5. Male or Female
6. Married, unmarried or widowed
7. Age completed last birth-day
8. Caste of Hindus and Jains, tribe or race of those of other religions
- 9.&10. OCCUPATION OR MEANS OF SUBSISTENCE OF ACTUAL

WORKERS

9. Principal occupation
10. Subsidiary occupation, if any
11. If dependent, principal occupation or means of subsistence of actual worker on whom dependent
12. District, province or country in which born

13. Language ordinarily spoken in the household
14. Literate or illiterate
15. Whether literate in English
16. If the person be insane or totally blind or suffering from corrosive leprosy or both deaf and dumb from birth, enter as such here.

1921

1. House Number
2. Serial number of person
3. Name
4. Religion
5. Male or Female
6. Married, unmarried, or widowed
7. Age
8. Caste, Tribe or Race
- 9.&10. OCCUPATION OR MEANS OF SUBSISTENCE OF ACTUAL WORKERS
9. Principal
10. Subsidiary
11. For dependents, the occupation of the worker by whom supported
12. Birth-district
13. Language ordinarily used
14. Literate or illiterate
15. Whether literate in English
16. Insane, totally blind, leper or deaf-mute

1931

1. Serial number of house or tenement
2. Serial Number of person
3. Name
4. Religion and Sect
5. Male or Female (enter M. or F.)
6. Married, Unmarried or Widowed (enter divorced persons as widowed)
7. Age (in years to nearest birth-day)
8. Race, Tribe or Caste
9. Earner or dependent
10. Principal occupation (this will be blank for dependent)
11. Subsidiary occupation (occupation of dependents may be given)
12. Industry in which employed (for organised employees only)
13. Birth district (or country)
14. Mother tongue
15. Other language in common use
16. Whether literate (i. e., able to write and read a letter)
17. Whether able to read and write English
18. Insane, totally blind, deaf-mute, or leper

1941

1. Name
2. Sex
3. Race, Tribe or Caste
4. Religion
5. Married, unmarried, widowed or divorced
6. Age
7. Number of children born to a married woman and number surviving
8. Her age at birth of first child
9. Are you wholly or partly dependent on any one else ?
10. If so, means of livelihood of person on whom dependent
11. Do you employ (a) paid assistants, (b) members of household ? If so, how many ?
12. Are you in employment now ?
13. (Only to those who reply in the negative to question 12) : Are you in search of employment ? (To those who reply in the affirmative the further question will be put-) How long have you been in search of it ?
14. Means of livelihood in order of importance.
15. (Only to be asked in regard to means of livelihood of or any subsidiary means of livelihood returned by other persons against question 14)
Does this means of livehood exist throughout the year ? If not, for what part of the year ?
16. If you are employed by some one else, what is his business ?
17. Where you born in this district ? If not in what district ?
18. Mother tongue
19. Other Indian languages in common use
20. Can you both read and write ? If so, what script do you write ? Can you only read ?
21. How far have you read ? Give any examination passed
22. Are you literate in English ?

1951

(Individual Slip)

1. Name & relationship to head of household
2. Nationality, Religion & Special Groups :
part (a) Nationality
part (b) Religion
part (c) Special Groups
3. Civil Condition
4. Age
5. Birth-place
6. Displaced persons

7. Mother tongue
8. Bilingualism
9. Economic Status
 - part One. Dependancy
 - part Two. Employment
10. Principal means of livelihood
11. Secondary means of livelihood
12. Literacy and Education
13. (optional to State Governments)×

× STATE NATURE OF QUESTION No. 13 (OPTIONAL)

Assam, Manipur Holding of Indigenous persons
& Tripura

Bihar Fertility

Bombay, Saura- Unemployment
shtra & Kutch

Hyderabad Are you unemployed and in search of employment ? If
so, since when ?

Mysore Unemployment

Madhya Pradesh No. of children born to a married woman and age at
birth of the first child

Punjab Are you unemployed since 9th Feb. 1951 ? If so, give
reasons.

Uttar Pradesh Unemployment

Vindhya Pradesh Unemployment

West Bengal Do you cultivate land for which you pay rent ?

APPENDIX-B

Statement showing the details of Tables prepared for 1961 Census

Sr. No.	Name and number of Table	Description
1	2	3
	A-Series	General population Tables
1.	A-I	Area, Houses and Population.
2.	A-II	Variation in population during sixty years.
3.	A-III	Villages classified by population.
4.	A-IV	Towns (and Town-groups) classified by popu- lation in 1961 with variation since 1901.
	B-Series	Economic Tables
		(i) General Economic Tables
1.	B-I	Workers and Non-workers classified by sex and broad age groups.

B-II	Workers and Non-workers in cities, town-groups and towns arranged territorially classified by sex and broad age-groups.
B-III Part-A	Industrial Classification of workers and non-workers by educational levels in Urban areas only .
B-IV Part-A	Industrial Classification by sex and class of worker of persons at work at Household Industry.
B-IV Part-B	Industrial classification by sex and class of worker of persons at work in non-household industry, trade, business, profession or service.
B-IV Part-C	Industrial classification by sex and divisions major groups and minor groups of persons at work other than cultivation.
B-V	Occupational classification by sex of persons at work other than cultivation.
B-VI	Occupational divisions of persons at work other than cultivation classified by sex broad age-groups and educational levels in urban areas only .
B-VII Part-A	Persons working principally (i) as cultivators, (ii) as agricultural labourers or (iii) at Household. Industry classified by sex and by Secondary work (i) at household Industry, (ii) as cultivator or (iii) as agricultural labourer.
B-VII Part-B	Industrial classification by sex of persons working in non-household industry, trade, business, profession or service who are also engaged in household Industry.
B-VIII Part-A	Persons unemployed aged 15 and above by sex, broad age groups and educational levels in urban areas only .
B-VIII Part-B	Persons unemployed aged 15 and above by sex and educational levels in Rural areas only .
B-IX	Persons not at work classified by sex, broad age groups and type of activity.
	(ii) Household Economic Tables
B-X	Sample Households (i) engaged neither in cultivation nor household industry, (ii) engaged either in cultivation or household industry but not in both and (iii) engaged both in

16.	B-XI	cultivation and household industry for all areas . Sample Households engaged in cultivation classified by interest in land & size of Land cultivated in Rural and Urban areas separately.
17.	B-XII	Sample households engaged in cultivation only classified by size of land cultivated and number of family workers and hired workers in Rural and Urban areas separately.
18.	B-XIII	Sample Households engaged both in cultivation and household industry showing size of land cultivated classified by Principal household industry in Rural and Urban areas separately.
19.	B-XIV	Sample Households engaged only in Household Industry classified by Principal household Industry in all areas . Part A-Households classified by major groups of Principal Household Industry & number of persons engaged.
20.	B-XIV	Sample Household engaged only in Household Industry classified by Principal household industry in all areas . Part B-Households classified by minor groups of Principal Household Industry.
21.	B-XV	Sample households engaged both in cultivation and household industry classified by size of land in rural and urban areas separately.
22.	B-XVI	Sample Principal Household industry classified by period of working and total number of workers engaged in household industry in all areas .

C-Series**Social and Cultural Tables**

1.	C-I Part-A	Size and composition of Sample households. Size of sample households classified by participation in household cultivation or industry.
2.	C-I Part-B	Size and composition of Sample households. Composition of Sample households.
3.	C-II	Age and Marital Status.
4.	C-III Part-A.	Age, sex and Education in all areas
5.	C-III Part-B.	Age, Sex and education in urban areas only .
6.	C-III Part-C.	Age, Sex and education in Rural areas only .
7.	C-IV	Single Year Age Returns.
8.	C-V	Mother-tongue (Alphabetical order)

C-VI	Bilingualism.
C-VII	Religion.
C-VIII	Scheduled Castes and Scheduled Tribes.
Part-A	Classification by literacy and industrial category of Workers and Non-workers among Scheduled Castes.
C-VIII	Scheduled Castes and Scheduled Tribes.
Part-B	Classification by Literacy and industrial Category of Workers and Non-workers among Scheduled Tribes.

D-Series MIGRATION TABLES

D-I	Non-Indian Nationals.
D-II	Place of Birth.
D-III	Migrants classified by place of Birth and duration of residence in place of Enumeration.
D-III-A	Migrants from other State and outside India (less than 5 years duration) classified by age groups.
D-IV	Migrants to cities classified by sex, broad age groups, educational level and in case of workers also by occupational divisions and groups.
D-V	Cities showing population Born locally, Migrants from Rural Areas & Migrants from other Towns and Cities.
D-VI	Distribution of Industrial Categories of workers and Non-workers by place of Birth.

E-Series HOUSING TABLES

E-I	Census House and the uses to which they are put.
E-II	Tenure Status of Sample Census houses used as dwelling.
E-III	Census houses used as factories and workshops classified by industry, power and no power used and size of employment.
E-IV	Distribution of sample households living in Census Houses used wholly or partly as dwelling by predominant material of wall and predominant material of roof.
E-V	Sample households classified by number of rooms occupied.

**SCT. Series SPECIAL TABLES FOR SCHEDULED
CASTES & SCHEDULED TRIBES**

1. SCT-I Part A Industrial classification of persons at work and non-workers by sex for Scheduled Castes.
2. SCT-I Part B Industrial Classification of persons at work and non-workers by sex for Scheduled Tribes.
3. SCT-II Part A Age and marital Status for Scheduled Castes.
4. SCT-II Part B Age and Marital Status for Scheduled Tribes.
5. SCT-III Part A (i) Education in urban areas only for Scheduled Castes.
6. SCT-III Part A (ii) Education in urban areas only for Scheduled Tribes.
7. SCT-III Part B. (i) Education in Rural areas only for Scheduled Castes.
8. SCT-III Part B (ii) Education in Rural areas only for Scheduled Tribes.
9. SCT-IV Part A Religion for Scheduled Tribes.
10. SCT-IV Part B. Religion for Scheduled Tribes
11. SCT-V Part A Sample Households engaged in cultivation classified by interest in land and size of land cultivated in Rural areas only for Scheduled Castes.
12. SCT-V Part B. Sample Households engaged in cultivation classified by interest in land and size of land cultivated in Rural areas only for Scheduled Tribes.

SC. Series SPECIAL TABLE FOR SCHEDULED CASTES ONLY

1. SC. I Persons not at work classified by sex, type of activity and educational levels for Scheduled Castes.

ST. Series SPECIAL TABLES FOR SCHEDULED TRIBES ONLY.

1. ST-I Mother tongue and Bi-lingualism for Scheduled Tribes.
2. ST-II Persons not at work classified by sex & type of activity for Scheduled Tribes.

Appendix C asks Location Code in which there are 12 Enquiries.

Appendix D is meant for Part I-Household Schedule and Part II-Census population Record Part I asks for A. Cultivation, B. Household Industry and C. workers at Cultivation or Household Industry, while part II is to be compiled from individual Census slips, in which Name, Sex, Relationship to Head, Age, Marital status and Discription of work in the case of worker are to be filled in.

REGIONAL DISPARITIES IN INCOME OF GUJARAT DISTRICTS

Syt. V. V. Divetia, Ahmedabad

1. Scope and Object :

It is now widely recognised that if the study of a country's economy through the national income analysis is to be of use, the single figure of national income or per-capita national income by itself is extremely inadequate for such a study. The national income figures must be studied from the various aspects and be further broken up in as much detail as the extent of availability of accurate data would permit. Break-ups according to per-capita income of different regions; according to industrial origins, etc. are essential to get an insight into the structure of the economy. Ideally, the economy must be presented as an articulated system of double entry accounts of different sectors. Furthermore, the study must also be extended to include the time dimension to gain the knowledge of differential rates of change of regional, sectoral and overall incomes over time.

In this paper it is proposed to study just one such aspect. From the national angle, the State level income estimates yield a regional classification of the estimates of net domestic product. In this paper, the intention is to further break down the State income estimates of Gujarat into district income estimates, to the extent possible. From the State angle, these figures are of considerable importance as they provide an important indicator of the relative economic levels of different regions within the State. The knowledge of regional disparities in incomes is essential to regional aspect of planning and the rates at which the regional incomes are changing over period of time serve to indicate the overall economic impact of the development measures taken according to planned programmes.

There is, of course, nothing sacrosanct about districts being chosen as the regional units for the study. Indeed it would be more desirable from the point of view of regional planning to delineate regional boundaries which encompass areas more homogeneous from the point of view of the degree of economic development or backwardness. For instance, if the eastern-most talukas of Surat, Baroda, Sabarkantha and Banaskantha Districts plus Dangs districts could be grouped into a single region, it would form a more homogeneous region from the point of view of planning. However, since much of the available information can be aggregated at district levels and its reliability cannot be ensured at lower levels, it becomes necessary at present to deal with the district boundaries for regional classification of State income.

It is proposed to examine in this study the district per-capita incomes in relation to the State per-capita incomes, the sectoral structure of different districts and the comparative aspect of the same as among the districts.

2. Limitations :

Lest one might in one's enthusiasm lay great store on the accuracy of the absolute amounts of the district incomes, it should be stressed here that these figures suffer from certain limitations and it is the relative levels of incomes that one should study rather than the absolute figures. Even the comparative study will not be a panacea for all the different types of inaccuracies which are inherent in the computation of district incomes. As one proceeds from the computation of income from a national level to levels below there are certain difficulties of concepts and even of methods which one must encounter, apart from the common difficulties due to lack of availability of adequate, accurate and upto-date data. Since these are well in the literature on the subject, it is not proposed to enumerate them here. Suffice it to say that the statements made in terms of comparative expressions will be more meaningful for the purposes of our study than the statements expressed in terms of absolute amounts.

One limitation of the analysis must also be noted. While attempt is made to classify the districts as relatively advanced or backward, it may be that only some parts of a district classified as backward may in fact be backward, whereas other parts of the district may be quite advanced economically. However, this point is not examined in the present study and if the analysis is to be pushed deeper into smaller regions than a district, it may be desirable to make use of other simpler economic indicators to mark out backward and advanced areas.

The terms "advanced" and "backward" are used only in a relative sense mainly as compared to the overall economic level of Gujarat. Thus districts which may be classified as advanced may turn out to be backward against some higher economic level.

3. Method of Computation .

In order to retain the focus on the analytical aspect of the figures, methods of computation are not described in detail. Some broad outlines of the methods can be found in Annexure-I of this article. It would be sufficient to mention that the methods are uniform for allocation of State income to the different districts and the type of incomparability which enters into comparison of State incomes of different states due to the different methods followed by different states is not present here. The figures are computed for the year 1959-60, the latest year for which a large measure of data are available. The estimates are the value figures at current prices of the net output, at factor cost, originating within the boundaries of different districts.

4. Per-Capita Income of Districts .

The following table gives the districtwise figures of total income, per-capita income, both expressed in relative terms with the state total income and

per-capita equated to 100. The density of population (1961 Census) figures are also given in a separate column. The details of figures in value terms can be seen in Statement-I at the end of this article.

Table-I

District	% of income to total State Income	Per-capita income (with State per- capita income 100)	Density of popu- lation (1961 Census) (with State density 100)
1. Kutch	3.5	97.3	14.3
2. Jamnagar	5.3	129.5	73.5
3. Rajkot	6.6	116.1	92.1
4. Surendranagar	3.4	110.4	58.1
5. Bhavnagar	5.8	102.3	84.3
6. Junagadh	5.8	93.6	104.3
7. Amreli	2.1	69.1	151.2
8. Banaskantha	3.0	65.4	91.4
9. Sabarkantha	3.9	83.9	113.0
10. Mehsana	6.7	81.9	136.9
11. Ahmedabad	20.5	191.6	223.7
12. Kaira	7.0	71.1	264.0
13. Panchmahals	4.6	64.4	147.4
14. Baroda	6.9	94.4	180.6
15. Broach	3.6	87.2	104.6
16. Surat	11.0	93.6	176.8
17. Dangs	0.2	68.1	36.4
All Districts	100.0	100.0	100.0
Actual figures for the state	Rs. 581 crores.	Rs. 298	285.6 persons per sq. mile

Figures in the above table show wide variations in the index of per-capita incomes of the districts from 192 for Ahmedabad district which ranks first to 64 for Panch Mahals ranking last among the districts. Between the highest ranking Ahmedabad and the second highest ranking district of Jamnagar, there is considerable difference. The distribution of districts according to the index of per-capita range is given below :

Table-2

Index of per-capita Income (State-100)	No of districts	Names of Districts
Less than 50	—	—
50 or more but less than 75	5	Amreli, Banaskantha, Kaira, Panch Mahals, Dangs

75 or more but less than 100	7	Kutch, Junagadh, Sabar- kantha, Mehsana, Baroda, Broach, Surat
100 or more but less than 125	3	Rajkot, Surendranagar, Bhavnagar
125 or more but less than 150	1	Jamnagar
150 or more	1	Ahmedabad
	<hr/> 17	

The concentration of districts is to be found in the range of 75 to 100. There is only one district in the highest range of 150 or more. In all, out of the 17 districts of Gujarat, 12 districts have a per-capita income index below 100 and only 5 have a figure of above 100

Against the background of these figures one could ask the question whether it is possible to classify the districts according to whether they are economically backward, relatively less backward, advanced or more advanced. Important as this question is, there is no simple or straightforward answer. The figures of per-capita incomes given in Table-1 and Statement-I show an interesting pattern, when seen in juxtaposition with the local knowledge of the degree of development and of factors affecting economic developments in different districts. Thus, although it is fairly well-known that Kaira District cannot be said to be economically less advanced as compared to many of the other districts of Gujarat, it turns out here that the per-capita income of Kaira (Rs. 212) is much less than that of some districts known to be economically backward (relatively speaking), such as, for instance, Kutch (Rs. 290) and Sabarkantha (Rs. 250). It seems, therefore, somewhat hazardous to give a simple answer to the above question. The reason for this is to be found in the concentration of population—as expressed by the density of population—in different districts. For instance the density of Kaira District is 745 persons per sq mile, the highest for any district in Gujarat, as against only 41 persons per sp. mile for Kutch and 323 for Sabarkantha. A plausible reason, and perhaps the most important one, for the existence of high-density areas with low per-capita income is to be found in the large proportion of the population depending on the agriculture, not contributing materially to agricultural production and being, therefore, almost redundant. In underdeveloped areas where the contribution of agricultural income to the national income is quite substantial, it is, therefore, possible to have high density areas—unless they are highly urbanised areas dependent largely on secondary and tertiary sectors (e. g. Ahmedabad) with low per-capita income. And, these need not necessarily be relatively backward as compared to some areas with low density and high per-capita income. This is a feature of the underdeveloped economy which needs more emphasis than

it has received since there is usually great temptation to identify low per-capita income areas with backward areas, without examining the density aspect of those regions. Even when allowance is made in the case of Kutch of the vast stretches of desert land, and the land-man ratios are worked out where land means only cultivable land, and not the geographical area, Kutch is so much more favourably placed with a figure of 2.3 acres per person as against only 0.7 acres per person for Kaira, that even with less advanced techniques of agricultural production than used in Kaira, and less industrial development, Kutch has a higher per-capita income than Kaira.

It seems reasonable, therefore, to examine the data further with the help of a four-fold classification of areas as follows and consider to which classification the districts belong, to find out whether relatively backward or advanced districts could be marked out. The four-fold classification is based on marking all districts with density lower than that for Gujarat as low density districts, and vice-versa, and marking all districts with per-capita incomes lower than that for Gujarat as low per-capita income districts and vice-versa.

Table-3

	Low per-capita Income	High per-capita Income
Low density	Dangs; Broach; Banaskantha; Kutch	Bhavnagar; Surendranagar; Rajkot; Jamnagar;
High density	Surat; Baroda; PanchMahals; Kaira; Mehsana; Sabarkantha; Amreli; Junagadh	Ahmedabad

On the basis of the above double dichotomy table, it is possible to make definite statement about the relatively more advanced districts only in the case of Ahmedabad which belong to high-density and high per-capita income class, and about the relatively backward districts only in the case of Dangs, Broach, Banaskantha and Kutch districts. The remaining 12 districts cannot be classed as either backward or advanced, on the basis of the figures of per-capita incomes. One could, however, go one step forward and state that the districts belonging to the high-density and low per-capita income class stand in need of either withdrawal of some population depending on agriculture as means of livelihood to other sectors of productive activity, or increase in productivity or both so that the effect of high density is off-set by higher production. This would also mean that the development in the non-primary sector should take place within the district as otherwise an alternative course to bring a district into advanced area category can also be to induce a shift of the population outside the district.

It must be observed here that the double dichotomy classification is not the only way of marking out distinctly advanced and backward areas. The manifold can be suitably increased. For instance, one could arrange the districts in the ascending order of density as well as of per-capita income; classify

first 6 districts as low density and low per-capita income districts, respectively; next 5 districts as medium density and medium per-capita income districts; and the last 6 districts in each ordering, as the high density and high per-capita income districts. Then the nine-fold classification would be as follows :-

Density	Per-Capita Income	Low	Medium	High
Low		Dangs	Broach	Kutch, Bhavnagar, Surendranagar
Medium		Banaskantha, Mehsana	Sabarkantha, Junagadh	Rajkot, Jamnagar
High		Panch-Mahalas, Amreli, Kaira	Baroda, Surat	Ahmedabad

Here the arrangement depends on the position of a district in the two different orderings and not on the relative level as compared to that of Gujarat. It may be interpreted here that while Ahmedabad belongs to the distinctly advanced category and Dangs to the distinctly backward category, Baroda, Surat, Rajkot and Jamnagar could perhaps be marked out as advanced districts, whereas Broach, Banaskantha and Mehsana could be termed backward districts; Sabarkantha and Junagadh could be considered as average; and the classification of the high density and low per-capita income districts of Panch-Mahalas, Amreli, and Kaira on the one hand, and the high per-capita income and low density districts of Kutch, Bhavnagar and Surendranagar cannot be determined with reference to per-capita and density figures.

This is so far one can go on the basis of the per-capita income. One must take up other instruments available for such analysis. This is attempted below.

5. Sectoral Contributions to District Incomes :

The relative levels of contributions of the primary, the secondary and the tertiary sectors to national income is considered to be a good measure of the degree of development of a country. As the country advances industrially, not only does the per-capita income increase but also there is an initial shift of the share of national income in favour of secondary sector mainly at the expense of the primary sector and later on there is a shift in favour of the tertiary sector. Having regard to this observed phenomenon, one can also compare the relative levels of economic development of different districts. Statement-II gives the percentage shares of each sector and sub-sector in the total district income, for each of the 17 districts of the State. On the basis of these figures the following table is constructed. In doing so, the share of mining sub-sector is allocated to the primary sector. Thus, agricultural and allied activities plus mining activity constitute the primary sector; the manufacturing activities constitute the secondary sector; and commerce, transport, communications and other services make up the tertiary sector.

Table-4

Percentage of Sectoral Income to total Income

District	Primary	Secondary	Tertiary	All sectors
1. Kutch	63.2	6.3	30.5	100.0
2. Jamnagar	52.4	22.2	25.4	100.0
3. Rajkot	53.0	13.8	33.2	100.0
4. Surendranagar	60.5	19.4	30.1	100.0
5. Bhavnagar	55.1	17.3	27.6	100.0
6. Junagadh	61.9	9.9	28.2	100.0
7. Amreli	61.1	11.2	27.7	100.0
8. Banaskantha	67.6	6.2	26.2	100.0
9. Sabarkantha	70.1	7.3	22.6	100.0
10. Mehsana	52.0	14.4	33.6	100.0
11. Ahmedabad	10.8	46.1	43.1	100.0
12. Kaira	45.6	17.3	37.1	100.0
13. Panch Mahals	62.1	8.5	29.4	100.0
14. Baroda	39.4	24.8	35.8	100.0
15. Broach	58.2	7.6	34.2	100.0
16. Surat	38.9	26.6	34.6	100.0
17. Dangs	77.3	0.7	22.0	100.0
All Districts	44.0	22.2	33.8	100.0

Actual figures for

the State (in crores

of Rs.)

256

129

196

581

It will be seen from the above table that in the case of Ahmedabad, Baroda and Surat districts, the levels of secondary and tertiary activities are above the corresponding levels for Gujarat State as a whole. In the case of Kaira, the tertiary activity is at a higher level, whereas in the case of Jamnagar district, the secondary activity is at par with that of Gujarat State, while the tertiary activity is at a lower level. In the case of other districts, both the secondary and the tertiary activities are at lower levels, as compared to that of Gujarat State, speaking in terms of the percentage share of each of these sectors to the total income of respective areas. When these figures are seen against those of Table-1, one can classify the districts of Ahmedabad, Baroda and Surat as advanced, followed by the districts of Kaira and Jamnagar. In the case of Kaira, the share of Primary sector is lower than that of Jamnagar, and although the per-capita income of Jamnagar is higher than that of Kaira, perhaps it would be justifiable to rank Kaira above Jamnagar from this point of view and particularly in view of the high density of the district which gives it a low figure of per-capita income. At the other extreme, Dangs, Banaskantha and Kutch, which belong to low density, low per-capita income, low secondary and low tertiary activity districts should rank as the most backward districts in the

State, followed by Broach, which has also low density, low per-capita income and low secondary activity but slightly higher level of tertiary activity as compared to that of the State. The districts of Bhavnagar, Surendranagar, Rajkot and Jamnagar have higher per-capita income inspite of lower levels of secondary and tertiary activities and this can be interpreted only in terms of low density of the districts. They may be considered less backward as compared to Broach, in so far as they have higher per-capita income and have higher level of secondary activity than that for Broach. These districts along with the districts of Panch Mahals, Mehsana, Sabarkantha, Amreli and Junagadh, which are high density and low per-capita income districts and with low levels of secondary and tertiary activities are principally dependent on agriculture as the main contributor to their respective district incomes.

The ranking of the districts in the descending order of the degree of the economic developement is a task which involves some subjective consideration. While it is possible to segregate the most advanced and the most backward districts in the State, the ranking of other districts involves setting up somewhat arbitrary criteria. This is so because it is very difficult to sort out all the reasons for high per-capita income in low density districts and low per-capita income in high density districts. However, the criterion fixed here is to give priority to these districts irrespective of per-capita income on the basis of the percentage share of the combined secondary and tertiary activities, such that the higher the share of a district, the higher is the ranking given to it. Where this share turns out to be equal for more than one district, the share of the tertiary sector is first taken into account to rank the district at a higher place. In such cases, the higher the share of the tertiary sector, the higher the rank. Accordingly the rank is as follows :

Ahmedabad; Baroda, Surat; Kaira; Surendranagar; Mehsana; Jamnagar; Rajkot; Bhavnagar; Amreli; Junagadh; Panch-Mahals; Sabarkantha; Broach; Kutch; Banaskantha; and Dangs

It will be noted that although Baroach, Kutch and Banaskantha have the share of secondary plus tertiary sector bigger than corresponding share of some of the districts ranked above, they have been given lower ranking because they, along with Dangs, belong to the category of low density, low per-capita and low secondary and low tertiary activities, and as stated earlier, the principle of higher ranking for higher share of secondary plus tertiary sector is applied to only intermediate districts which have either low density and higher per-capita income, or high density and low per-capita income.

6. Concluding Remarks :

In this article, the disparities of per-capita income and of the relative contributions of primary, secondary and tertiary sectors for different districts of Gujarat have been studied. An attempt has been made here to classify the districts into backward and advanced districts within the State on the basis of

the data relating to density of population, per-capita income and the percentage shares of primary, secondary and tertiary sectors of each district. There is no doubt that such a classification of districts would depend materially on the accuracy of the data and of the methods with which these figures have been computed but it is to be hoped that the results presented here will perhaps serve to show one direction in which the research could be profitably pursued for the classification of districts into backward and advanced districts as also to study the disparities of economic development prevailing in different districts. One point which has been emphasised in this article is that per-capita income alone cannot give a correct classification of backward and advanced districts. In an under-developed country such as ours, where the agricultural income is substantial and a substantial proportion of population which depends on agriculture as its livelihood is redundant in the sense that its marginal productivity is zero although it may be classed as working population. Other factors other than per-capita income should be taken into account. It is particularly difficult to classify districts with low per-capita income and high density of population on the one hand and districts with high per-capita income and low density of population on the basis of per-capita income only. Their further classification has to be done on certain other criteria and in this article the criterion used for such districts is to rank them according to their combined share of secondary and tertiary sectors.

ANNEXTURE I

Broad Outlines of the Methods of Computations of District Incomes

The method, generally speaking, is to compute districtwise estimates directly wherever possible on the basis of figures of quantity of production, prices prevalent in the district, and the costs of inputs which have got to be subtracted from the gross value of output. Where the district income cannot be directly calculated, the income for the State as a whole for the year 1959-60 is allocated in proportion to the values of certain indicators set up for the purpose. The sectorwise methods of computation are described very briefly as follows :

(1) Agriculture :

The state income from agriculture has been calculated first for the year 1959-60 on the basis of production figures for the state as a whole and weighted farm harvest prices, where weights are the average production in the districts for the last three years ending 1958-59. This procedure has to be adopted for each major crop, since districtwise figures of production for 1959-60 are not available. For other crops, the methods normally followed for State income have been applied to work out the State income from these crops for 1959-60. Thereafter, the total net income from agriculture has been allocated to each district in proportion to the average income for the district from agriculture for the three-year period ending 1958-59.

(2) Animal Husbandry :

Income from milk production is first estimated for each district on the basis of number of cows and the buffaloes and using the average annual milk yield rates derived on the basis of a sample survey conducted recently by the Institute of Agricultural Research Statistics, New Delhi. Estimates for the number of livestock are arrived at by using the rates of change between 1956 and 1961 for which Livestock Census figures are available. Similarly, income from milk products, meat, wool, goathair, etc. is estimated for each district. Prices relevant to these districts have been used for valuation of these products. For the remaining items like dung, poultry, increment to livestock, etc. the State income from these items is allocated to different districts in proportion to the number of livestock of each relevant type in different districts.

(3) Forestry :

The districtwise value figures of timber and other forest products exploited are not available and hence the figures for the State as a whole for 1959-60 has been allocated to each district in proportion to the area under forests in each district.

(4) Fisheries :

The districtwise figures of fish catch for each district of Rajkot Division and for the former Baroda Division as a whole for the year 1960-61 are available. For 1959-60, the figures for total fish catch and value are available at Division level only as furnished by the Department of Fisheries. The value for Rajkot Division is allocated to its districts in proportion to the fish catch as available for 1950-61. For the rest of the districts, the value figure for the former Baroda Division has been allocated in proportion to the working force in fisheries (1951 Census), in each of its districts.

(5) Mining

Income due to the extraction of different minerals is available according to the districts for the year 1959-60, except for salt. Income due to salt is allocated using the number of workers in salt industry in each district.

(6) Factory Establishments :

The net value added for the factories registered under Factories Act and employing 50 or more working and using power or 100 workers or more and not using power is worked out on the basis of data available in the Annual Survey of Industries for 1959, for each district. For the remaining segment, the National Sample Survey Organisation has conducted a statutory sample survey and its results have been used to work out the district estimates. The total net value added by these small-scale factories is allocated to the districts in proportion to the number of workers in different districts. For each industry of the three-digit classification, separate districtwise allocation of net value added is made.

(7) Small Enterprises :

The districtwise figures for income from small and cottage industries have

been computed in two steps. For 14 of the 16 industries for which the Bureau has conducted a survey, districtwise figures are directly estimated. These 14 industries comprised (1) Weaving, (2) Dyeing and Printing, (3) Jari thread work, (4) Blacksmithy, (5) Metal work, (6) Carpentry, (7) Cane and bamboo products, (8) Bricks and tiles, (9) Other potteries, (10) Leather working and tanning, (11) Oil pressing, (12) Soap making, (13) Match making, and (14) Bee-keeping. Gur, paddy husking, have not been accounted for as the processing values from sugarcane to gur, from paddy to rice and in non-registered factories is already accounted for in agricultural income. For the remaining industries, the aggregate has been estimated on the basis of combined results of the National Sample Survey-State matching sample, and the survey conducted by the Bureau. This value is allocated to districts in proportion to their contribution to income from this sector for the above-mentioned 14 industries.

(8) Banking and Insurance :

The state income from this sector is first allocated between Rajkot and former Baroda Divisions in proportion to the total value of cheques cleared at Rajkot and Ahmedabad centres respectively. Thereafter, these Division totals are distributed among their respective districts in proportion to the number of banking offices in each district.

(9) Other Commerce :

The State income from other commerce is distributed to each district in proportion to the total sales as available in the Sales Tax Census of 1957-58 conducted by the Bureau.

(10) Railways :

Half the total income from railways in respect of Gujarat State is allocated to districts on the basis of districtwise revenue accruing from passenger and goods traffic together, for which the figures are available for the year 1959-60, while the remaining half is allocated on the basis of districtwise railway mileage figures.

(11) Communication :

The State income from communication sector is allocated in proportion to the number of establishment in different districts.

(12) Profession and Liberal Arts :

The State income from this sector is allocated in proportion to the number of teachers in educational institutes in each district. This has been done since teachers form a very substantial part of the working force belonging to professions and liberal arts.

(13) Domestic Services and Public Administration :

In the case of domestic services, the State income from domestic services has been allocated in proportion to the working force (1951 Census) and in the case of public administration, the State income has been allocated in pro-

portion to the number of State Government employees in each district, as available in the Census of State Government Employees for the year 1960.

(14) House Property :

The estimates have been calculated for each district directly on the basis of information available for estimating annual letting value for municipalities and Gram Panchayats.

STATEMENT NO. I

District Income by the Industrial Origin for the year 1959-60

(At current prices)

Rs. in lakhs

Kutch Jamnagar Rajkot Surendrnagar Bhavnagar

I Agriculture and allied activities

1. Agriculture	851	1204	1661	720	1435
2. Animal Husbandry	304	272	325	215	343
3. Forestry	8	12	4	2	4
4. Hunting and Fisheries	12	12	2	—	30
5. Total of Agriculture	1175	1500	1992	937	1812

II Mining and Manufacturing

6. Mining	106	117	22	62	32
7. Factory Establishment	27	500	224	179	319
8. Small enterprises	102	186	302	205	262
Total of Mining & Manufac.	235	803	548	445	613

III Commerce Transport & Communication

9. Banking and insurance	13	24	41	24	29
10. Other Commerce	119	267	451	131	273
11. Railway	164	113	134	120	102
12. Other transport	43	40	68	23	45
13. Communication	9	5	9	4	8
Total of Commerce, transport and Communication	348	449	703	302	457

IV Other Services

14. Professional and Liberal Arts	86	146	251	123	182
15. Domestic Services	9	6	16	6	20
16. Public Administration	119	90	154	100	122
17. House property	59	90	138	64	137
Total of other Services	273	332	559	293	468
Net Domestic product at factor Cost (DI)	2031	3084	3802	1978	3350

Per-capita income in Rs.	290	386	346	329	305
Density of Population, (persons per Sq. mile)	41	210	263	166	241

STATEMENT NO. I

Junagadh : Amreli : Banaskantha : Sabarkantha : Mehsana : Ahmedabad

I						
1.	1526	490	689	1150	1435	907
2.	454	223	472	422	568	383
3.	31	4	23	—	21	—
4.	57	20	—	—	—	—
5. Total	2068	737	1184	1572	2024	1290
II						
6.	6	21	—	5	4	—
7.	143	26	14	58	334	4514
8.	190	133	94	105	227	1020
Total	339	160	108	168	565	5534
II						
9.	33	21	42	54	193	374
10.	285	59	83	151	358	2949
11.	97	39	50	21	146	184
12.	55	12	45	30	96	11
13.	9	5	4	7	11	9
Total	479	136	224	243	784	3727
IV						
14.	210	103	113	146	300	496
15.	5	3	11	8	12	42
16.	137	63	60	69	88	204
17.	112	39	52	42	124	697
Total	464	208	236	265	524	1439
	3350	1241	1752	2248	3897	11990
	279	206	195	250	244	571
	298	432	247	323	391	639

STATEMENT NO. I (Continued)

Kaira : P'mahals : Baroda : Broach : Surat : Dangs : Total

I							
1.	1413	1160	1339	1039	1944	54	19017
2.	420	421	230	140	447	20	5659
3.	2	36	8	19	49	28	251
4.	—	—	—	11	46	—	190
5. Total	1835	1617	1577	1209	2486	102	25117
II							
6.	19	49	6	—	3	—	452
7.	477	122	866	67	1000	—	8870
8.	231	106	129	92	696	1	4061
Total	727	277	1001	159	1699	1	13383
III							
9.	277	133	199	102	223	—	1782
10.	356	136	350	184	754	6	6872
11.	117	77	119	64	122	—	1669

12.	58	18	40	15	106	—	905
13.	14	6	10	8	20	1	139
Total	822	370	718	373	1225	7	11367
IV							
14.	420	227	313	159	555	10	3947
15.	10	19	30	13	46	1	257
16.	114	83	203	74	168	8	1856
17.	145	89	171	92	222	3	2276
Total	689	418	717	338	991	22	8236
	4073	2682	4013	2079	9401	132	58103
	212	192	287	260	279	203	298
	654	421	516	299	505	104	286

STATEMENT NO II

Distribution of Sectorial District Income as percentage to Total District Income
Kutch Jamnagar Rajkot Surendranagar Bhavnagar

I Agriculture and allied activities

1. Agriculture	42.0	39.0	43.7	36.4	42.9
2. Animal Husbandry	15.0	8.8	8.5	10.9	10.2
3. Forestry	0.4	0.4	0.1	0.1	0.1
4. Hunting & Fisheries	0.5	0.4	0.1	—	0.9
Total of Agriculture	57.9	48.6	52.4	47.4	54.1

II Mining and Manufacturing

5. Mining	5.3	3.8	0.6	3.1	1.0
6. Factory Establishments	1.3	16.2	5.9	9.0	9.5
7. Small enterprises	5.0	6.0	7.9	10.4	7.8
Total of mining and manufacturing	11.6	26.0	14.4	22.5	18.3

III Commerce, transport & Communication

8. Banking & Insurance	0.6	0.7	1.1	1.2	0.9
9. Other Commerce	5.9	8.7	11.9	6.6	8.1
10. Railways	8.1	3.7	3.5	6.1	3.0
11. Other transport	2.1	1.3	1.8	1.2	1.3
12. Communication	0.4	0.2	0.2	0.2	0.3
Total of commerce transport, & communication	17.1	14.6	18.5	15.3	13.6

IV Other Services

13. Professions & Liberal Arts

14. Domestic Services	4.2	4.8	6.6	6.2	5.7
15. Public Administration	0.4	0.2	0.4	0.3	0.6
16. House property	5.9	2.9	4.1	5.1	3.6
Total of other Services	2.9	2.9	3.6	3.2	4.1
Net Domestic Product at factor cost (D I.)	13.4	10.8	14.7	14.8	14.0

factor cost (D I.) 100.0 100.0 100.0 100.0 100.0

STATEMENT NO. II (Continued)

Junagadh Amreli Banaskantha S'kantha Mehsana Ahmedabad

I						
1.	45.6	39.5	39.3	51.1	36.8	7.6
2.	13.5	18.0	26.9	18.8	14.6	3.2
3.	0.9	0.3	1.4	—	0.5	—
4.	1.7	1.6	—	—	—	—
Total	61.7	59.4	67.6	69.9	51.9	10.8
II						
5.	0.2	1.7	—	0.2	0.1	—
6.	4.3	2.1	0.8	2.6	8.6	37.6
7.	5.6	9.1	5.4	4.7	5.8	8.5
Total	10.1	12.9	6.2	7.5	14.5	46.1
III						
8.	1.0	1.7	2.5	2.5	4.9	3.1
9.	8.5	4.8	4.7	5.8	8.7	24.7
10.	2.9	3.1	2.8	0.9	3.7	1.5
11.	1.6	0.9	2.6	1.3	2.5	1.7
12.	0.3	0.4	0.2	0.3	0.3	0.1
Total	14.3	10.9	11.8	12.8	20.1	31.1
IV						
13.	6.4	8.3	6.4	6.5	7.7	4.1
14.	0.1	0.2	0.6	0.3	0.4	0.3
15.	4.1	5.1	3.4	3.1	2.2	1.8
16.	3.3	3.2	3.0	1.9	3.2	5.8
Total	13.9	16.8	13.4	11.8	13.5	12.0
	100.0	100.0	100.0	100.0	100.0	100.0

STATEMENT NO. II (Continued)

	Kaira	P'mahals	Baroda	Broach	Surat	Dangs	Total
I							
1.	34.7	43.3	33.4	50.0	30.4	40.9	52.7
2.	10.3	15.7	5.7	6.8	7.0	15.2	9.8
3.	0.1	1.3	0.2	0.9	0.8	21.2	0.4
4.	—	—	—	0.5	0.7	—	0.3
Total	45.1	60.3	39.3	58.2	38.9	77.3	43.2
II							
5.	0.5	1.8	0.1	—	—	—	0.8
6.	11.7	4.5	21.6	3.2	15.6	—	15.3
7.	5.6	4.0	3.2	4.4	10.9	0.7	6.9
Total	17.8	10.3	24.9	7.6	26.5	0.7	23.0
III							
8.	6.8	5.0	4.9	4.9	3.5	—	3.1
9.	8.7	5.1	8.7	8.9	11.8	4.6	11.8
10.	2.9	2.9	3.0	3.1	1.9	—	2.9
11.	1.4	0.6	1.0	0.7	1.7	—	1.6
12.	0.4	0.2	0.3	0.3	0.3	0.7	0.2
Total	20.0	13.8	17.9	17.9	19.1	5.3	19.6

IV							
13.	10.3	8.5	7.8	7.7	8.7	7.6	6.6
14.	0.2	0.7	0.7	0.6	0.7	0.7	0.4
15.	2.8	3.1	5.1	3.6	2.6	6.1	3.3
16.	3.6	3.3	4.3	4.4	3.5	2.3	3.9
Total	16.9	15.6	17.9	16.3	15.5	16.7	14.2
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

FARM PRODUCTION & RESOURCE-USE IN AGRICULTURE IN GUJARAT, 1949-59 *

Dr. C. H. Shah, Hon. Secretary, Gujarat Research Society

Are the resources employed in agriculture used fully and efficiently? Underlying this question are such general and widely known questions: is there a significant amount of under-employed labour and an excess capacity of farm assets? These are big problems which pose serious conceptual and measurement problems. Efforts at direct empirical measurement are not likely to succeed significantly. We adopt an alternative which involves an indirect inference. We approach the problem via the study of production trends and fluctuations.

The theoretical construct on which we build up our hypothesis is this: when production fluctuates with large amplitude, the unit-costs of production jump around with big hops if the production organisation has no built-in flexibility (technically speaking, if the average cost-curve is nearly V-shaped); on the other hand, if the production organisation has the built-in flexibility (i.e. the average cost curve is U-shaped with a wide base) the unit costs may be fairly stable but the utilisation of resources would only infrequently reach the full capacity level. The average unit-costs over a period are likely to be higher in both the cases than would be the case if the production were stable. We would therefore prefer less fluctuating production to a more fluctuating production.

For the interpretation of trends, the theoretical construct is simpler. If the trend in production is higher than that in any of the input, it is a clear case of improved overall productivity. The gain in productivity may be due to

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1. It is often alleged, compared to land, bullocks are too many and their number keeps on rising without a corresponding expansion of land under cultivation. This is construed to imply existence of excess bullock capacity. Under-utilisation of irrigation capacity of some of the irrigation projects is very well known, the extreme case of which is provided by Kakrapar irrigation project in Gujarat.

better technological conditions as well as better utilisation of the resources in use. Whether full utilisation level will be reached or not is a material, but subsidiary point for discussion in this situation; since waste any time is bad, but waste in a situation of rising prosperity would be less hurtful unless it involves a human problem—e.g. misery of the unemployed.

We may find the interpretation difficult when trends of outputs and inputs are disparate. Any input that expands at a rate greater than the rate of expansion of production will be in the stage of diminishing product. Unless that input is easily substitutable with others, 'excessive' expansion of it would mean a declining relative share in the total output such as would lead to a decline in its value of marginal product. If to begin with, there was an excess supply of this input, its relatively greater expansion would almost spell disaster. Regarding trend, therefore, we shall prefer relatively rapid expansion of output to all inputs; if disparate movements obtain, we shall be required to carefully look into the initial situation.

Farm Production Fluctuations in Gujarat

We consider a certain minimum fluctuations in farm production unavoidable. There is a range outside these limits within which fluctuations can be tolerable; but beyond this range, enormous stresses and strains are generated in the economy. To anticipate the conclusions, fluctuations of farm production in Gujarat belong to the third category. They would generate enormous stresses and strains.

Emirically, the limits of unavoidable fluctuations, tolerable fluctuations, and undesirable fluctuations are fixed arbitrarily. We follow more than one procedure for fixing these limits.

To measure fluctuation, we follow this procedure. In the first instance, we fit the trend. We then calculate the differences of the actual output levels from the expected ones. The sum of these differences is expected to be zero and is very low for any good fit of the trend. We then work out the standard deviations of the deviations (the disturbances or residuals) of the actual from the expected level of the farm output. Since the mean of the latter is zero or low, the magnitude of standard deviation would indicate the variability of deviations. We assume that the economy wants to move up as smoothly as possible at the rate indicated by the trend coefficient. If, therefore, the above standard deviation is half the value of the trend coefficient fluctuations may be considered unavoidable, that are to be taken in the stride because fluctuations within this range ensure of a definite and perceptible increase every year. The tolerated limits would be reached if the trend coefficient and the standard deviation is bigger than the trend coefficient then the limits of toleration are crossed and fluctuations put heavy stress on the economy.

Statistical results worked out are as under : We fitted a quadratic function to the index numbers of farm output for Gujarat for 1949-50 to 1958-59 data with ten observations :

$$y = a + bt_i + ct_i^2 + u_i$$

where y = index number of farm output with base 1949-50 = 100
 t_i = year with $i = 1, 2, \dots, 10$
 u_i = disturbance term

and obtained the following results :

$$y' = 88.823 + 8.674 t_i + .1049 t_i^2$$

We shall discuss the implications of the trend later. For our purpose it is relevant to note at this stage that the level of farm production increased at the annual rate of 8.779 to 10.73 points. The deviations were as under :

Deviations

Year	y	y ¹	y - y ¹
1949-50	100.0	88.8	+ 11.2
1950-51	110.8	97.6	+ 13.2
1951-52	61.3	106.6	- 45.3
1952-53	101.9	115.7	- 13.8
1953-54	147.4	125.1	+ 22.3
1954-55	164.8	134.7	+ 30.1
1955-56	178.2	154.4	- 6.2
1956-57	164.7	154.4	+ 10.3
1957-58	129.4	168.6	+ 39.2
1958-59	190.4	175.0	+ 15.4

y = Index number of actual production y^1 = Index number of expected production.

The standard deviation (6) of deviations worked out to 23.5 points, which was more than double the annual addition in any one year. A glance through the column of deviations also convinces us of the wide annual fluctuations. Out of 10 years only for one year the deviation was smaller than the expected rate of expansion; in no year it was half of the latter. The danger of wide fluctuations is revealed by the fact that actual performance might be below or above by 23 percent in terms of 1949-50 production level - i. e. the range is that of nearly 46 per cent. Compare two adjacent years with 129.4 and 190.4 index numbers, and the danger of fluctuations becomes at once evident. Instead of 6, if a simpler measure is preferred, then a simple average ignoring the signs of individual deviations can be used. It too works out to 20.1 points. Our conclusions are unchanged if we adopt this simple measure. Further what is important to note is that there is no significant change in the amplitude of fluctuations during the decade under study. The standard deviation of fluctuations for 5 years, 1949-50 to 1953-54, worked out to 24.53 points. For the subsequent five years, it worked out to 22.29 points.

Comparison with All-India

A comparison of fluctuation with those for all-India provide another measure. All-India farm production level would be an aggregate of the regional levels; this implies if weather has no uniform influence over the country, the fluctuations in different regions being in opposite directions would mutually cancel out their influences. It may then produce a pleasantly smooth trend for all-India and conceal the miseries of regions caused by their fluctuating farm production level. What then is desirable for the country is not cancellation of opposite fluctuations of regions only, but relatively small fluctuations for regions too. We may fix arbitrarily that 6 for a region equal to that for a country is the most desired limit, twice that of the latter is a tolerable limit and beyond that unbearable. Trend for all-India data was fixed as under for 12 years from 1949-50 to 1950-61 .

$$y = a + bt_i + u$$

where y = Production index 1949-50 = 100
 t_i = Year with $i = 1, 2, \dots, 12$.
 u_i = disturbance from
 we obtained the following results :
 $y' = 94.713 + 3.737 t_i$

This meant the farm production increased annually at the rate of 3.737 points when 1949-50 = 100. Fluctuations as indicated by deviations are shown by the table below :

Year	Deviations (in terms of index number points when 1949-50 = 100)
1949-50	+5.3
1950-51	-2.8
1951-52	-4.7
1952-53	-3.9
1953-54	+5.7
1954-55	+3.6
1955-56	-0.3
1956-57	+3.4
1957-58	-8.7
1958-59	+3.7
1959-60	-3.4
1960-61	+0.3

The standard deviation (6) of the above deviation worked out to 4.1 which was within the tolerable limit and nearer the limit considered.

The value of standard deviations of fluctuations around trend for Gujarat minimum necessary is more than 5 times bigger than that for India

Thus, judged on the basis of comparison with all-India or on the basis of absolute but arbitrarily fixed standards of tolerable limits of fluctuations, farm production fluctuations in Gujarat are found to be too wide.

Trend

Fluctuations of productions have been worked out around the trend and the validity of the former depends on the validity of the latter. At least, in this respect, discussion of the trend should have precedence. However, our major occupation in this paper is with fluctuations. With trends, for statistical estimation, we experience two difficulties : (i) we have limited number of observations, and (ii) wide the fluctuations, poorer will be the fit. We have, therefore, relied more on the eye observation and determined the function to fit the trend. The best fit in fact would follow closely the annual fluctuations if a suitable mathematical function can be evolved. In fact, we take the stand that the trend in our case reflects more what is desired and what the economy is capable to achieve and not necessarily is a good statistical fit for the actual observations, since we do not intend to predict production level for any one subsequent year.

With the above statistical limitations we may make two observations regarding the farm production trend in Gujarat. In the first place, the quadratic function with the positive sign before the coefficient of the square of the independent variable (t_i = time) gives us a trend which itself rises, though gently with the passage of time a very desirable feature. In ten years time, the annual rate of additional increases from 8.674 points to 10.73 points, a little more than 22 percent increase in the rate itself. In the second place, it is far above the annual rate of growth of farm production for all-India.

There are serious limitations of the production data observed during the last ten years which are not so important for the interpretation of fluctuations¹ but cannot be ignored while interpreting trends. Briefly, they are : (i) changes in the statistical coverage (ii) changes in the method of estimation of yield per acre, (iii) biases introduced by existence of the Government controls on farm production and prices and imposition of the compulsory grain levy. Their total effect is to exaggerate increase in farm output.

Professor M. L. Dantwala in his study of 'Trends in Yield per Acre'² brings out clearly that yields in 1949-50 were very low for all crops compared to earlier years. Dr. V. K. R. V. Rao estimated for 1945-1946 food

1. In fact if they are taken in account, the amplitude of fluctuations is likely to increase.

2. "Trends in yields per Acre" M. L. Dantwala in 'Changing India' (Ed) N. V. Sovani and V. M. Dandekar

production to be underestimated by about 10 per cent.* A general feeling of yields being underestimated even during years earlier than 1945-46 is shared widely. This was about the country as a whole. In Gujarat, comparatively much larger area under Indian States merged with British districts. Yields in the eastwhile Indian States are likely to be more underestimated. We infer therefore a range of underestimation of yields and production in the years around 1949-50 by 10 to 33 per cent in Gujarat. This would mean that the trend fitted to the index number exaggerates annual expansion of production quite significantly. If underestimation was around 33 per cent in 1949-50 and few subsequent years, then increase in 10 years' time would be about 46 per cent instead of 90 per cent. During the past 10 years area under foodgrains declined by 14 per cent and that under important non-food crops increased. This would imply that the increase in production would be due to improved average value productivity also (facilitated by product substitution).

Against this, we may juxtapose 32 per cent increase in rural population—which may indicate as much or a little smaller increase in labour supply—and 36 per cent or more addition to capital stock and unchanged land area (Between 1953-4 and 1961-62 and under crops unchanged properly. We can infer from this an improvement in value productivity of all inputs—quite covetable for some inputs like labour and no firm assertion can be made regarding average physical productivity.

Implications

Our theoretical construct and the statistical analysis may be brought together in order to draw conclusions. One very important implication is that the likelihood of employment situation worsening consequent on increased rural population is to be discounted; probably there is reason to believe for some improvement. Similarly, there is little likelihood of expanded excess capacity of traditional farm equipments, if at all, there might have been some reduction of it. This excludes irrigation. The general trend of improvement of utilisation of resources, however, was accompanied by wide annual fluctuations in farm production; which implies existence of under-utilization of both labour and capital (except land which is a scarce resource) during the years of downswings

*Food Crops of India, Govt. of India, 1945, Preface.

One can raise at this stage an important technical question :

A region may not be worse off with wider fluctuations if the mean (in this case the trend coefficient) is high enough. In case of Gujarat we have higher trend coefficient with wider fluctuations. Answer to this could be. A rational preference curve between mean and could be convex to the G axis, i.e. rate of increase of fluctuations would be lower at higher mean. In case of Gujarat trend is lightly more than double but the G is over five times that of India.

with acute scarcities being experienced during the years of upswings.¹ Besides, the fluctuations did not tend to decline perceptively. In other words, the progress towards fuller utilisation is not accompanied by progress in towards efficient utilisation of resources in agriculture in Gujarat.

If there is no significant excess capacity of capital stock on farms at the moment, it is probably because savings are still low in agriculture. A rapid absorption of co-operative credit in face of wide production fluctuations (which would suggest high investment risks)² is suggestive of a persistent potential desire to build up excess capacity. In fact, when long-term capital is available for investment in durable capital especially wells, the opportunity has been availed for building up even excess capacity beyond the present requirement judged on the basis of trend. Tagavi loans were used by farmers for this purpose. If bullocks have not been added rapidly, it is because of their relatively inelastic supply leading to high relative prices.³

The major immediate problem then facing agriculture in Gujarat is reduction of the amplitude of farm production fluctuations. Low cost supplementary irrigation projects on a wider scale can provide a better answer than crop insurance or perennial irrigation in selected areas.

CAPITAL FORMATION IN AGRICULTURE IN GUJARAT 1951-61

Smt. Tara Shukla

The decade of 1951-61 is a decade of planned efforts for developing the nation's economy. For this, investment is made by the State out of resources mobilized by it. A full realization of these efforts depends as much on the efforts of producers to expand production and these would be in large measure in the form of investment. A study of investment in farm sector by the individual cultivators is of importance from this point.

1. These implications would explain some of glaring paradoxes. One such paradox is posed by farm labourers complaining about lack of work or low wage incomes, and farmers complaining about acute shortages of labour and rising trend in wages in Gujarat. Apart from seasonal peaks and troughs in farm employment influencing attitudes of farmers and farm labourers, the annual fluctuations in farm production have no mean contribution to the building up of the conflicting attitudes, farmers being impressed more by experience of up-swings and labourers by that of down-swings.

2. As indicated in another paper read at this 'Conference. Cooperative credit in Gujarat : Progress and Problems.'

3. Trends in Capital Formation in Agriculture in Gujarat, Tara Shukla. Journal of the Gujarat Research Society, April, 1960, Capital Formation in Agriculture in Gujarat, 1951-61, Tara Shukla,

Investment study enables us to see, besides the magnitude of the total investment effort, the composition of additional investment and the latter is one of the indicators of the technological change in the production-methods. A comparison of the investment rate with the rate of expansion of labour force on one hand and production on other enables us to understand if not forecast, the path of the future expansion and economic prosperity.

Limitations of Data

We stress here only those limitations of the data which directly affect the estimates of capital formation in Gujarat. They are mainly as follows : Firstly, we require, at least at one point of time data regarding prices of durable assets on farm for evolving price-weights. They are not available for Gujarat for the period we intend to study. We have, therefore, used All-India data which are again based on fragmentary information. This is a serious but inevitable limitation and we have no means even to infer its influence on the aggregate estimates.

Secondly, the list of assets covered by the livestock census is traditionally fixed since 1935. They include bullocks, ploughs, electric pumps, oil engines, tractors, carts, and sugarcane-crushers. We know that even the traditional tools of farmers are many more. In this recent period of economic development many new tools and implements have come into use. Besides, a farmer has started using larger doses of fertilizers, improved seeds, pesticides etc., which require him to expand investment on working capital. Investment in land improvement is now an important item of expenditure on which we have very little information.

Thirdly, we have no information regarding the qualitative changes in the items that are reported by the livestock census. We discuss the investment trends subject to these limitations.

The Procedure

We construct an index of stock of capital on farms by weighting each item by its value in the year 1950-51. We have thus a value weighted aggregate index with 1950-51 = 100 as the base. Since we do not have prices of assets for any subsequent years it will not be possible for us to check the influence of the change in the relative weights on the aggregate index. Since bullock commands a dominating place with 84 p. c. weight in the total, we believe the above influence will be small. The difference between aggregate indices of two periods we have interpreted to indicate the change in capital and hence in investment. This is neither pure gross nor pure net investment; the former would include replacement depreciation, the latter only the addition to the capacity net of change in the average age of the assets. We assume that our index will be nearer the latter and reflect a trend in the net investment more faithfully.

The Trend and Composition of Investment

We set out the relevant data of individual assets, their indexes, their aggregate index for Gujarat for 1950-51, 1955-56 and 1961-62. All India data are not available for 1964-62.

Capital in Agriculture in 1955-56 and 1960-61 as compared to 1950-51=100

1950-51	Gujarat			All India		
	1955-56	1960-61		1955-56		
	Number (000)	Number (000)	Index	Number (000)	Index	Index
1. Bullocks ¹	2372	2757	113	3045	125	106.84
2. Ploughs : Worn	1116	1266	104	1459	120	112.54
Iron	30	57	190	106	350	140.69
3. Carts	521	632	121	708	136	110.50
4. Oil engines	12	19	150	45	375	146.75
5. Electric pumps	1.0	1.1	100	6.2	600	215.83
6. Tractors	less than 500	1.1	256	2.0	512	272.60
7. Sugarcane-crushers						
power drawn	1.0	1.3	100	2.0	200	95.47
Bullock drawn	2.0	2.6	150	4.3	200	106.83
Weighted Index	100.00		115.38		136.48	180.23

During 1950-51 to 1961-62, durable assets on farm used for production purposes have increased by over 36 per cent. This is likely to be larger compared to that for All-India or that for Gujarat in the past. For All-India the asset on farms (those assets which we considered) increased by only 8 per cent during 5 years. Even if the rate has doubled during the subsequent period, Gujarat would maintain its lead. In the past, on the basis of information available for 5 British districts of Gujarat, during the decade of 1935-36 to 1945-46 the assets on farms remained more or less unchanged.*

Compositional changes are important. They suggest capital widening in addition to capital deepening, with an emphasis on the former. During this decade, expansion of traditional items like bullocks, wooden ploughs, carts, was below the overall average and this trend is observed in both the quinquennia. As against this, the expansion of the better and relatively more productive implements, was much above the overall average, particularly that in electric pumps, tractors and oil engines it was noteworthy. Use of electric pumps has increased almost entirely during the last five years, but it is not at the cost of oil engines which have increased in number more during the past five years than during 1951-56. In regard to composition, the pattern in Gujarat

1. Includes Bulls during 1955-56 and 1960-61 in case of Gujarat.

* Trends in Capital Formation in Agriculture in Gujarat', Tara Shukla, J. G. R. S., April 1961.

follows more or less that for All-India. It is worth noting that this trend of modernization of farm implements obtained also during 1935-46 when the aggregate of assets on farm remained nearly stationary. This suggests that a silent but continuous revolution in the farm equipment and technology is going on now for nearly a quarter century.

Irrigation

Area irrigated increased in Gujarat during 1950-51 to 1956-57 as under :

Year	Area irrigated (000 acres)
1950-51	864
1951-52	1127
1952-53	1172
1953-54	1342
1954-55	1193
1955-56	1314
1956-57	1361

The upward trend in irrigation is obvious, the range of increase being 20 to 57 per cent—not a mean increase during the last 6 to 7 years. The overall estimate of investment rate during the last 10 years will not be lowered if we include irrigation. If similar data are available for fertilizer and improved seed, considering the effort made, they would show a similar trend.

Implications

During the past decade, rural population in Gujarat increased from nearly 12 millions to 15 millions or about 32 per cent (to be exact 31.85 per cent). Even Census data are not considered free from biases and the definition of urban areas have changed from census to census. Only an elaborate research can indicate the exact increase in rural population. The economic classification for 1961 census is not available and hence we have to contend with the rural population changes as the indicator of the labour force in agriculture. We are aware that this assumes the ratios of population and labour force in agriculture to total agricultural population to be constant. Errors on this account are likely to be marginal.

Against 32 per cent increase in labour in agriculture 36 per cent increase in capital, with either small or no change in land (exact change is not known) cannot be considered sufficient. It however makes us sanguine in only one respect viz. the capacity of agriculture to keep pace with the rising tide of rural population. The changing composition of agriculture is then the only factor that would improve labour productivity.

Usually, when other factors are either constant or rising less than additions to capital, other things being the same, productivity of capital is likely to decline. To measure this output/capital ratios—average as well as incremental—are required. During the post-independence period production data have been a subject to various influences affecting adversely its reliability; the boundary

changes, the increased statistical coverage, the change in the method of estimation of yields, controls on prices, production and distribution of food and their removal are all such influences. Consideration of all these influences in detail at this stage would carry us much beyond the limited scope of this paper. We shall rather hazard a view that there is only a limited increase in the output capital ratio, if any.

This implies, the technological change in agriculture would be very small and would be at the most a little more than sufficient to compensate the effect of diminishing returns that would be caused by constancy of land against the rising inputs of labour and capital. Development of agriculture that would spell prosperity for the economy, would require a more rapid technological change than this.

*CATTLE PROBLEM IN GUJARAT

Dr. V. S. Vyas

Gujarat has some of the best known breeds of cattle in the country. The animal husbandry as supplementary occupation to cultivation is practised on a preponderantly large number of farms in the State. The state has large number of organised dairy one of which claims to be the biggest in Asia. Nearly 15 per cent of the state income in Gujarat is contributed by animal husbandry.¹ Yet, surprisingly little attention has been paid on the problems of cattle by the research workers of Gujarat.² Paucity of basic data is one handicap. Lack of coordination in the research work and absence of priorities in tackling problems might also have to do something with the present gap in the knowledge about cattle economy. In the following paragraphs certain basic problems in this sector are highlighted with the help of the data available from the live-stock census. The absence of data does not permit us to comment

*In this paper word 'Cattle' is used as a synonym of bovine animals, viz. cows, bullocks, young stock of cows, she-buffaloes, he-buffaloes and young stock of buffaloes.

1. See estimate of State Income by Industrial Origin, for the year 1959-60, Table 18 I. Handbook of Basic Statistics, Gujarat :State, 1961, published by Bureau of Economics & Statistics, Government of Gujarat, Ahmedabad 1962.

2. Apart from some technical studies at the Institute of Agriculture, Anand and one or two studies in marketing undertaken by individual research workers the author can cite only one comprehensive economic enquiry on the impact of dairy on the economies of farm families in Charotar region from where large quantities of milk is collected and dispatched to Bombay City. This study was undertaken as a part of a wider study of the problem of supply of milk to Bombay City. See M. B. Desai and V. S. Vyas, A study of Milk problem of Bombay City—A report submitted to the Bombay Government, 1960

(Unpublished).

on the problems relating to the quality of livestock or their yields. Even if the prices of different types of cattle were available from a number of marketing centres we could have formed some idea about the quality of the cattle. In the absence of the relevant data, in the course of following discussion we have mainly commented on the numerical aspects of the problem. The discussion, thus, is largely incomplete. Yet this would at least serve as a basis for more detailed work on this significant aspect of Gujarat's economy.

Availability and Requirements of Cattle : One of the main uses of cattle in this country is for supplying power for traction. The requirement of this power depends on the gross cultivated area, type of agricultural operations and ancillary services like irrigation and transport for which animal traction is used. Another major use of cattle is as supplier of milk. Manure is the third principal product of the cattle. The supply of hides, skins and bones etc. are additional benefits of the cattle.

According to the latest available data, for the year 1958-59, in the country as a whole 372.2 million acres of land was cultivated. 75.1 million working animals were established¹ to be available for cultivating this area. Accordingly, on an average a pair of bullock was available for every 10 acres of the cultivated area. In Gujarat for the same year a pair of bullock was available for every 16 acres or so. Thus, for the purpose of cultivation the bullock power which is an almost exclusive source of traction in cultivation was very much inadequate even when compared to the country as a whole.² It is true, though, that the requirement of traction power for irrigation was lower in Gujarat than in other parts of the country, partly because very low percentage of cultivable area in Gujarat is under irrigation, and partly also because the mechanical means of traction for the irrigation purposes, namely electric pumps and diesel pumps are used in a large number in this state.

Position of the State in regard to availability of milch cattle is no way

1. Taking the mean figures of the working cattle in 1956 and 1961, two years of quinquennial livestock census and assuming that proportion of working stock, milch cattle etc. is same in 1961 as it was in 1956. This arbitrary assumption had to be made since the detailed countrywide information from 1961 livestock census is not available. It is presumed that the chances of these estimates going far wrong are meagre. The figures of 1961 livestock census are taken from Monthly Abstract of Statistics, May, 1962, p. 77. The figures for Gujarat are taken from Agricultural Situation in India, February 1962, p. 1146.

2. According to one source the country needs about 70 million bullocks for traction purposes, as against 65 million available. See, Role of Animal Husbandry, by U. N. Dhebar, Khadi Gramodyog, Vol. VIII, No. IX, June 1962, pp. 564-565.

better than that for the country as a whole, which as is well-known has a serious paucity of milch cattle. In the country as a whole for every 100 people, there were 18 milch cattle in 1961 comprising of 12 cows and 6 buffaloes. During the same year in Gujarat the number of milch cattle per 100 persons was 17 comprising of 9 cows and 8 buffaloes. On the other hand looking to the higher ratio of urban population in Gujarat (urban population in Gujarat accounted for 25.6 per cent of the total population as against 17.8 per cent in India as a whole,) the demand for milk is likely to be higher in this state. Even when the account is taken of several high milk yielding breeds among Gujarat's animal stock and a slightly larger ratio of buffaloes among the milch cattle in this state compared to India, the fact of inadequacy of milch cattle cannot be wished away.

As far as the other products of this cattle, manure, hide and skin, etc. are concerned a disproportionately small number of cattle in Gujarat clearly indicate a smaller supply of these products; though the supply of hide and skin will also depend to some extent on the mortality rate among the cattle. Thus, it is clear that the cattle wealth of Gujarat is inadequate for the supply of traction power or the milk or other products even when compared to the average availability of these products and services for the country as a whole,—latter by no standard being anywhere near the real requirements.

Rate of Growth of Cattle in Gujarat : The data from the 1951 livestock census are available only for ten districts of Gujarat which were formerly part of the Bombay State. The data for all the seventeen districts of Gujarat are available on for the year 1956 and 1961. During this quinquennium the rate of growth of bovine population in Gujarat was 1.16 per cent per annum. During the same period the rate of growth in the country as a whole was 2.21 per cent per annum. Even in 1956 Gujarat had less than its share of bovine population—on the criteria of density per square mile and number of cattle per person; the slower rate of growth further weakened the position.*

Growth of unproductive cattle—The whole question of 'unproductive cattle' is emotionally charged. Without entering into the controversy whether the stray bulls or the barren cows also give as much in return as they consume, following categories of bovines are considered, for the purpose of this paper, unproductive animals—stray bulls (put in the livestock census as other male above three years), stray he-buffaloes, other female cattle and other buffaloes. Such animals numbered nearly 72 thousand in 1956, and their number remained at 70 thousand in 1961. Proportionately, they formed less than 1 per cent of the total

* On the basis of the data of ten districts, which were formerly part of Bombay State, it can be said that the rate of growth in Gujarat even during 1951-56 was slower than the average rate of growth for the country.

bovine population .8 per cent in 1956 and .7 per cent in 1961 and provide one of the brighter feature of Gujarat's cattle situation.

Wastage of Young-stock : While the small number of useless cattle are a bright spot in the state, the wastage of young-stock is one of the disturbing features. The result of the last two live-stock censuses, clearly bring out the callous attitude of the people in the state regarding the young-stock. In this respect the people of Gujarat seem to be even less careful about their cattle-wealth than the people in other parts of the country. This is indicated by a higher proportion of young-stock in the bovine population and a slower rate of growth of the bovine population of the other hand. Thus the young-stock accounted for nearly 32 per cent of the total bovine population in Gujarat in 1956 while they accounted for nearly 29 per cent for the country as a whole. But during the quinquennium, the bovine population in Gujarat increased by 8 per cent as against an increase of 11 per cent in the country as a whole. However, if a sizable number of the young-stock are exported (net) from the state, the proportion of young-stock in the bovine population in 1956 and the subsequent changes in the number of animal will not bear direct relationship. In the absence of relevant data it is difficult to arrive at a firm conclusion, though it is presumed that the export of young-stock do not account for the discrepancy noted above. It is the mal-nutrition, diseases, and ill-care which take a heavy toll of the young-stock. This wastage is more pronounced in case of buffaloes.

Availability of Usefull Cattle : During last quinquennium significant changes have taken place in the number of useful animals viz. work-stock and milch cattle, both cows and buffaloes.

	1956	1961	% increase in 1961 over 1956
Work-stock	27, 26, 209	30, 21, 410	10.8
Cows in milk	16, 43, 439	81, 00, 473	9.6
Buffaloes in milk	14, 58, 138	16, 38, 830	12.39

It may be inferred from the above that, while the increases in the milch animals, specially buffaloes in Gujarat during the period 1956-61 was quite impressive, the availability of work-stock is not so satisfactory. It should be noted, however, that the rate of increase in the number of milch cattle was slower than the rate of increase in human population. It needs serious considerations as to why the rate of growth of work-stock and milch animals is so sluggish. If this is the pace of growth in number, all possible attempts should be made to improve the quality of the herd; so that they fulfil the increasing demands on their services and products.

Cows Vs. Buffaloes : Even among the milch cattle the uneven growth of cows and buffaloes call for some comments. Among many controversial and

largely unresolved issues of animal husbandry the one most frequently debated is the issue of cows Versus buffaloes. The advantages of the cow is that it is a dual-purpose animal, it serves both as a source of work-stock and milk. In that respect buffalo is useful mainly for the milk. In Gujarat its progeny is not usually put under the yoke. But buffalo is a high milk yielder and its advantages to the dairy farmers and urban milk supplier are obvious. In the composition of milch cattle, buffaloes account for a higher share, viz. 48 per cent in Gujarat than the average for the country, which is 32 per cent of buffaloes in the total milch cattle, will warrant. Similarly, this proportion in Gujarat has remained static around 48 per cent during the last quinquennium. It is obvious, therefore, that in any programme of live-stock improvement, the buffaloes should have their own share. More so, in the districts like Kaira, where the marketing of milk is highly organized.

There is another aspect of the problems which needs some attention. Normally it will be advantageous to have buffaloes as the source of milk supplied to the towns, if the supply of milk has to come from within the towns or from the periphery of the towns in order to minimise the transport costs. The high milk yielding buffaloes if kept in the towns or at the periphery of towns can hold their own, on economic considerations, against a dual-purpose animal like cow. But because of the lack of a directive policy the advantages on concentrating the cows and buffaloes in suitable location have not been taken. We find from the 1961 live-stock census that proportion of cows (over three years) and she-buffaloes (over three years) in the rural and urban areas is practically same.

Neglect of Animal Husbandry in Gujarat's Plan: It is surprising that inspite of so many favourable features, superior breeds, a peasantry accustomed to animal husbandry, a number of organised dairies, comparatively better availability of grass and fodder, very little attention has been paid by the planning authorities on developing the cattle-wealth. As was noted earlier, the animal husbandry contributes 15 per cent of the state income of Gujarat. But in the Third Five Year Plan of Gujarat only 2.33 crores, out of a total outlay of 235 crores, are to be spent on the development of animal husbandry, and other 1.85 crores are to be spent on the development of dairying and milk supply. Even if the expenditure under latter, viz. dairy development etc. are taken as that incurred for the improvement of live-stock economy, the total outlay on this head is less than 2 per cent of the total outlay of the plan. This amply suggests the step-motherly treatment towards this important sector of the State's economy. Several other indicators of this neglect attitude can be quoted. Thus by 1960-61, the last year for which data are available. There were only 3 cattle breeding farms, none for the buffaloes. There were only nine centres for artificial insemination for the whole of the State. There were less than 400 veterinary

dispensaries (including miniature veterinary aid centre which numbered 205)¹. The same state of affairs prevails in respect of other facilities required for the development of animal husbandry.

Conclusion : From the above discussion certain broad conclusions can be drawn. In Gujarat the availability of work-stock and milch cattle are even lower than the average availability in the country as a whole, which, as is well known, is highly inadequate. During the last decade, and more firmly one can say for last quinquennium, the rate of growth of bovine population in Gujarat is slower than the average rate of growth in the country. At the same time the proportion of useless cattle has not declined markedly in Gujarat over last few years. There seems to be huge wastage of young-stock which burdens the live-stock economy with the uneconomic and wasteful use of resources. The picture becomes sombre when it is known that the rate of growth of useful animals, both work-stock and milch animal is not keeping pace with the requirements for these. The buffaloes, though constituting a sizable section of the milch animals are particularly neglected and the advantages of these high yielding animals, by concentrating on the urban peripheries are completely ignored. There are further reasons for pessimism when one notes the negligible funds allotted for the improvement of the cattle-wealth of Gujarat in Gujarat's Third Five Year Plan.

STUDY OF RAINFALL OF KUTCH

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The annual rainfall of fortyfive years (1911-1955) for eleven stations of Kutch and Kutch as a whole is considered in this paper with a view to study its distribution, variation, trend, intensity, reliability etc. Rainfall in relation to water requirements of plants, soil conservation, vegetation and crops are also studied.

Conclusions drawn are :

1. Considerable variation in the rainfall occurs from year to year. July is the rainest month. Next come August and September. Further September rainfall is greater than that of June. The water run-off is more likely to occur in the months of July and August than in other months of the year. The range of variation is very great for all stations.

2. There are more number of times rainfall below normal than above normal. During the years 1911 to 1955, the year 1914 is the ideal year for all eleven stations.

3. The years 1911, 1918 and 1939 are the lean years for all the eleven stations. But besides these years, years 1915, 1923, 1925, 1948 and 1955 are

1. See, Handbook of Basic Statistics of Gujarat, op cit p 92.

the lean years for Kutch as a whole. It is interesting to note that these years coincide with famine years of Gujarat as a whole or some parts of Gujarat.

4. The years 1913, 1926 and 1944 are the years of excess rain-fall for all the eleven stations. Besides these years, years 1917 and 1953 are the excess years for Kutch as a whole. Only once excess and deficit rainfall or vice versa occurred in adjacent years. The chances of one excess year being succeeded by another or one deficit year being succeeded by another appear to be small.

5. The coefficient of variability percentage decreases of stations from east to west and increases from stations from south to north.

6. Ten year running mean shows downward trend of rainfall from the year 1927 onwards.

7. Intensity of rainfall is high.

8. From the study of reliability of the rainfall it is seen that 31 to 32 years in a 100 the rainfall is likely to be below the selected level i. e. three fourth of the normal for Kutch as a whole.

9. The failure of crops causes considerable distress. As the variability is relatively great the rainfall is not dependable, hence irrigation is necessary to suppliment the rainfall.

10. Since the farming, in general, more or less, entirely depends upon the vagaries of monsoon, the moisture is one of the major limiting factors in comparative low outturn of many crop-plants, hence adequate information on water requirements is of prime importance in profitable production of crop-plants.

11. Dry-farming system should be introduced for the profitable use of water and soil and doubling the yield by giving trials to drought resistant varieties of crop-plants.

CO-OPERBTIVE CREDIT IN GUJARAT : PROGRESS AND PROBLEMS¹

Syt. A. V Shah, Bombay

In the discussion of problems of rural planning in Gujarat, cooperative movement, because of its size and significance, should invariably figure prominently.

1. The paper is based on a part of the Ph. D. thesis on the "Integrated Scheme of Rural Credit with Reference to the Gujarat Region" being prepared by the author in the Department of Economics, University of Bombay.

A note on the supply of credit and its inter-district variations was published in the Journal of Gujarat Research Society, April 1960.

The Gujarat Region herein referred to, excludes from the present State of Gujarat Saurashtra, Kutch and Dangs.

This paper has a limited objective; namely to review for the Gujarat region developments that have taken place under the impact of the Integrated scheme in the sphere of cooperative credit for the period of a decade since 1949-50 and on the basis of this review, identify factors that help or hinder the growth of cooperation.

During the decade, two significant steps have been taken in the direction of the reorganising cooperative credit in the region : (i) the process of integration and development of cooperative movement initiated in 1950 by the Bombay State Co-operative Bank; and (ii) the introduction of the Integrated Scheme of Rural Credit in 1955-56. Though the former scheme was less ambitious, it had prepared the ground for a rapid development under the latter.

Supply of Co-operative Credit (1949-50 to 1958-59)

It is too obvious to state that the main purpose of both the schemes was to satisfy more adequately and efficiently the credit requirements of all classes of cultivators. One of the important yard-sticks of measuring the success of these schemes is therefore the extent of credit supply by cooperatives. The following table gives the idea of the credit supply in the region and a comparison with that in India during the last decade.

Table 1

Credit Supply in Gujarat Region and India, 1949-50 to 1958-59

Year	Gujarat Region	Index	India	Percentage share of Gujarat in India	
1949-50	0.98	100	17.99	100	5.8
1950-51	1.47	150	22.90	127	6.9
1951-52	1.81	185	24.21	134	8.1
1952-53	2.43	248	25.69	143	10.4
1953-54	2.52	257	29.64	165	9.3
1954-55	2.96	302	35.48	197	9.1
1955-56	3.83	391	49.62	276	2.4
1956-57	5.39	550	67.33	374	8.7
1957-58	8.73	891	96.08	534	10.0
1958-59	11.54	1176	125.50	698	10.1

Over the decade, the credit supply in the Gujarat region increased by over eleven times as against about six times in India. The rate of increase in the region was comparatively slow upto 1955-56 but from that year when the Integrated Scheme came into operation it gathered considerable momentum. Throughout the latter period, the pace of development in the region is higher than that of India. It is most likely that but for the first scheme of the Bombay State Co-operative Bank which had done considerable spadework, the lead over India in the latter period would not have been possible. The percentage

share of the region in India increases over a decade from 5.8 to 10.1. The increase, however, is not steady and continuous. Any student of Indian cooperation will at once accede that the progress achieved in the region during the last decade, particularly in last four years is very satisfactory.

In the following table the pace of development of the Gujarat region is compared with that of other cooperatively developed regions of India only for the latter period 1955-56 to 1958-59. The comparison with the first period is difficult due to boundary changes as a consequence of the reorganisation of the States.

Table 2

Year	(Rs. in crores)						
	Gujarat	Andhra	Madras	Punjab	U. P.	Maharashtra	Kerala
1955-56	3.83	5.80	5.67	3.69	5.58	7.33	0.34
1958-59	11.53	14.30	13.18	8.64	14.98	14.61	2.78
Percentage increase in 1958-59 over 1955-56	301	247	232	234	268	199	818

With the exception of Kerala where development in cooperative credit was almost from a scratch, the rate of progress in the Gujarat region was higher than those of any other cooperatively developed States compared above.

A few more indicators of progress may also be compared. This comparison is made with reference to the last year viz. 1958-59.

Table 3

	Gujarat Region	All India	Maximum elsewhere
(1) Villages covered by primary cooperatives (per cent)	86	60.1	Kerala, 99.1
(2) Population covered (per cent)	21.2	35.3	" 99.0
(3) Credit advanced per member (Rs.)	316	105	—
(4) Credit advanced per society (Rs.)	29464	6861	—
(5) Working capital per society (Rs.)	32780	9346	
(6) Owned funds per society (Rs.)	10425	2538	
(7) Overdues as percentage to outstandings	9	20	

Here too with the exception of Kerala which has maximum coverage in respect of both villages and population the region ranks first so far as other indicators are concerned. The average working capital of the society in Gujarat is more than three times the average for India; the average loan advanced per society is even four times the average for India; the loan advanced per mem-

ber is Rs. 316 as against Rs. 105 for the country owned funds per society are again four times higher than those for India and what is more satisfying is the fact that overdues as percentage to outstandings are considerably lower compared to those for the All-India viz. 9 and 20 respectively. It should be emphasised that 'other' indicators are a measure of the economic soundness and operational efficiency of the cooperatives.

The above analysis leads to the conclusion that the region ranks high not only in respect of the pace of increase in credit supply but also in an all-round development of cooperative credit system as measured by important indicators of progress.

Share of Co-operative Credit in Total Credit Supply

Though it is not possible to make reliable estimates regarding credit supply by all the agencies and the share of cooperative credit system in it, we have recorded data at least for three important credit agencies viz. money-lenders, cooperatives and the government which we assume, supply major portion of the credit. Data regarding credit advanced by money-lenders and the government were collected from the Annual Administration Reports of the Money-lenders Act of Bombay.

Table 4
Credit Supply in the Gujarat Region

Year	Cooperatives	Government	Money-lenders	(Rs. in lakhs)	
				Total	Index
				Rs.	
1949-50	98 (12.4)	135 (17.1)	558 (70.5)	791	100
1950-51	147 (16.7)	54 (6.1)	681 (77.2)	882	111
1951-52	181 (20.0)	69 (7.7)	654 (73.3)	904	114
1952-53	243 (24.9)	55 (5.6)	677 (69.4)	475	123
1953-54	252 (28.8)	30 (3.4)	592 (67.7)	874	110
1954-55	295 (34.2)	21 (2.4)	546 (63.3)	862	109
1955-56	382 (40.3)	27 (2.8)	539 (56.9)	948	120
1956-57	39 (48.9)	16 (1.4)	548 (49.7)	1103	139
1957-58	873 (50.6)	130 (6.7)	721 (41.8)	1724	218
1958-59	1154 (60.3)	77 (4.0)	682 (35.6)	1913	242

Figures in the brackets indicate percentages to total.

We can observe that the aggregate credit supply for the region has increased over this period by 242 per cent. The demand for credit being a derived demand, the rise in it can be attributed to mainly three factors viz. increase in agricultural production, rapid commercialisation and generally favourable terms of trade of agriculture which was slightly disturbed in 1954-55 and 1955-56. The credit supplied by money-lenders has not declined. On the contrary, it shows increase by 22 per cent but their share (of the money-lenders) came down

from 70.5 to 35.6 per cent. Similarly the share of the Government finance was reduced to 4.0 per cent, from 17.1 per cent. Over this period cooperative credit recorded a phenomenal increase and its share rose from 12.4 per cent in 1949-50 to 60.3 per cent in 1958-59.

It should be remembered that in the absence of comprehensive knowledge regarding the credit of all credit agencies these estimates of shares are essentially tentative. Another significant fact to be noted in this connection is that it is only cooperatively weak districts like Panchmahals, Banaskantha, Amreli etc. even the money-lenders' credit has remained stagnant. It shows that these areas have low credit absorption capacity. Any scheme of cooperative credit will have to take cognisance of this factor. What such areas first require is not credit but the creation of conditions which may increase the willingness and ability of cultivators to make productive use of credit.

Comparative Progress in Gujarat and India

In order to identify the main points of difference which characterise the cooperative credit systems of Gujarat and India, it is necessary to carry the comparison between them further. We should know as to how they have fared in respect of various indicators of progress over the period of a decade. In the following tables giving comparison between the Gujarat and India, the years of reference selected are 1949-50, 1955-56 and 1958-59. The Integrated Scheme of the Bombay State Cooperative Bank was initiated in 1949-50. The Integrated Scheme recommended by the Committee of Direction, All India Rural Credit Survey was initiated in 1955-56 and third year 1958-59 is taken because published data were available upto this year.

The following table illustrates the progress of societies and membership during this period.

Table 5
Progress of Societies and Membership

Year	No. of Societies		No. of Members	
	India 000	Gujarat Region No.	India Millions	Gujarat Thousands
1949-50	117	2172	4.8	150
1955-56	160	2972	7.80	261
1958-59	167	3915	11.9	365
Percentage increase in				
(3) over (1)	42.7	80.2	147.9	143.3
(3) over (2)	4.4	31.7	52.6	39.8

From the point of view of the organisation of societies Gujarat shows better performance than India for both the periods. Particularly in the second period the progress for India as a whole is extremely slow, only 4.4 per cent

against 31.7 per cent in the Gujarat Region. But in respect of the growth of membership India shows better results than the Gujarat Region. In the second period when the country added 52.6 per cent to its membership, the Gujarat Region added about 40 per cent. The slow rate of growth in membership is a very significant fact. There are two possible explanations. Firstly, people with smaller size of holdings may have been admitted in the fold of cooperative movement only in a restricted number. Secondly, in the cooperatively developed areas the progress is intensive rather than extensive and in cooperatively under developed areas though the organization of societies is rapid they do not command in the initial years sufficiently large membership.

The expansion between the growth of capital structure is given in the table 6 and in table 7 (See at the end of this article.); a further idea is given of the progress in terms of important averages in respect of both per society and per member.

A few points of significance, emerging from these tables should be noted. The most important characteristic which distinguishes the cooperative credit system of Gujarat from that of India is the fact of 'size'. The average membership per society is larger so also are the resources at its disposal and loan operations. This point—size as a factor in growth—is extremely important. We have also noted the increasing reliance of cooperatives in the Gujarat region on borrowed funds, without at the same time jeopardising the financial integrity of the cooperative banking system. This shows that one of the important objectives of the integrated scheme viz. linking the primary cooperative with upper layers of organisation (i. e. vertical integration) seems to have been achieved in this region.

Again the increasing reliance on outside funds is deliberately promoted by the policy of State partnership because of the shortage of funds within the cooperative movement. The State on the one hand contributes to the share-capital of the primary societies and augment their borrowing capacity and on the other provides liberal credit facilities. This form of new relationship in the context of increasing reliance on borrowed funds by the cooperatives should engage greater attention. Perhaps the most disturbing factor is that of continuous decline in 'deposits'. The cooperatives are intended to be the primary agencies for mobilising rural savings and it is in this very vital function they have almost failed. Factors impeding the mobilisation needs to be analysed closely. There are several of them. First, this aspect of cooperatives has not received enough attention and all efforts at present are concentrated on loan operations. Secondly, some of the procedures regarding deposits are obsolete and far from attracting savings, they discourage members in depositing their savings in a cooperative. The rate of interest he gets is lower (2 per cent or below) than what he is likely to get from other sources. Deposits with the

cooperative are being fixed, the member cannot withdraw in needs. So for all practical purposes, the savings deposited with the cooperative are frozen and in periods of needs cannot be relied upon.

Has this growth been evenly distributed or concentrated in certain areas as is the case for the country as a whole? The following table answers this question.

Table 8

Year	Ahmeda- bad	Amre- li	Mehsa- na	Banas- kanthna	Kaira	Sabar kantha	Baro da	Broa ch	Panch Mahals	Surat	Total
1949-50	17.2	4.3	2.8	0.2	4.7	2.7	8.6	34.9	8.1	16.9	100
1955-56	23.5	3.7	5.6	2.9	6.3	5.5	15.0	20.3	3.5	13.3	100
1958-59	13.0	3.5	7.2	2.9	6.2	5.2	11.4	41.2	2.3	6.0	100

In the above table percentage distribution of credit is given for all the districts for three years. The first point to be noted is that in all the three districts, viz. Broach, Surat, Ahmedabad and Baroda which are relatively more developed, shared between them 70 to 75 per cent of the total credit supply. But the more outstanding observation is that the rapid growth witnessed in the last three years is only concentrated in the Broach District which was selected for the Pilot Project in 1955-56. The concentration of efforts is so much in this district that it has brought down considerably the percentage shares of other important districts viz. Surat, Ahmedabad and Broach and commanded as high a share in the region as 41 per cent. In case of the remaining districts except Panchmahals the percentage shares remain almost constant. On the basis of this table three districts viz. Panchmahals, Banaskantha and Amreli can be treated as cooperatively backward. In Panchmahals the cooperative credit situation shows considerable deterioration and none of the measures recently undertaken to promote the growth of cooperative movement seems to have any impact. Amreli and Banaskantha have somehow managed to stay where they were and the growth is very slow. The situation of this kind brings us to the most important question as to why such unevenness between districts prevails. The factors responsible for such a rapid progress or otherwise can be broadly divided into two categories: (1) those concerning the cooperative movement and (2) those beyond its competence. Among the first category we specifically take note of three viz. (i) the share of borrowed funds in the working capital; (ii) the percentage share of large-sized societies in the total credit supply; and (iii) the extent of overdues. All of them are very important to the growth of cooperative credit system. But because of the lack of space, they are not discussed in this paper.

The second category includes certain agronomic factors like the size of holding, the extent of commercialization and certain social factors like the extent of male literacy, percentage of scheduled castes and tribes and also the share of moneylenders' credit.

These factors are summarised in the following table. They are ranked together considerably help us in understanding not only the intra-regional differences but also the difference between the region and India.

Table 9

(See at the end of this article.)

The first thing to be noted is that the average size of holding for the region is 8.7 as against 5.3 for India. In three districts viz. Kaira, Panchmahals and Surat, the average size of holding is below the regional average, the four other districts viz. Baroda, Sabarkantha, Mehsana and Broach it is between the regional average and 10 acres and in the remaining districts it is above 10 acres. Of the total holdings 74,995 in the region, though 32.4 per cent are below 5 acres, the actual area commanded by them works out to only 5.7 per cent of which as high as 15 per cent is leased out.

Table 10

Distribution and Size of Agricultural Holdings in the Gujarat Region

Grade of Holdings	Area owned (ordinary Acres)					
	Number of holdings	Area	Area given on lease % to Area			
Upto 5 acres	24,291	32.4	63,493	5.7	9,515	15.0
5-10	16,048	21.4	1,08,417	9.7	8,013	7.4
10-25	20,917	27.9	3,41,262	30.6	19,143	5.6
25-50	10,768	14.4	3,73,228	33.4	14,864	4.0
50-100	2,648	3.5	1,68,813	15.2	9,327	5.5
100-500	313	0.4	51,406	4.6	8,542	16.6
Above 500	10	—	9,398	0.8	3,127	33.3
Total	74,995	100.0	1,16,067	100.0	72,531	6.5

If we take 10 acres as an economic unit we find as high as 53.8 per cent of the holdings fall below (outside) this category, and they command 15.4 per cent of the area. Thus we see that not only the average size of holding is bigger than that of India but also the distribution of agricultural holdings is so skewed that as high as 84.6 per cent of the area is under the size of holding 10 acres or more. Another fact to be noted is regarding the tenure system. The bulk of the area was under peasant proprietorship and only in some pockets, the intermediary system prevailed. The owned land was mostly under personal cultivation and it was only two categories of cultivators who leased out more than 5 per cent of their land. Those having very small size of holdings (5 acres or less) or those owning excessively say 100 acres or more. Thus from the point of view of size of holding distribution of holdings and the tenure system, the region is very favourably placed as compared to other parts of the country particularly the North and the North East.

Agriculture in the region is highly commercialised and this is a factor influencing considerably the growth of the cooperative movement. For the period

1956-59, the average area under food crops was 53.8 per cent in the region as against 74.8 per cent for India. It is interesting to note that the districts where cooperative movement has not made much progress have larger percentage of cultivated area under food-crops, Banaskantha 90.9, Panchmahals 80.2, Mehsana 74.4. But what is more important than this is the fact that the area under commercial crops has been increasing rapidly in the recent period.² Mainly there are two important commercial crops viz. cotton and groundnut. For the region as a whole in 1958-59, cotton claimed 23.6 per cent of the cultivated area and groundnut 8.1 per cent. Cotton occupied as much as 56.4 per cent of the cultivated area in Broach in 1958-59, 48.9 per cent in Baroda, 35.4 per cent in Surat, 34.8 per cent in Ahmedabad and 25.7 per cent in Sabarkantha. Groundnut on the other hand, occupied 32.6 per cent of the cultivated area of Amreli, 18.6 per cent in Sabarkantha and 10.8 per cent in Panchmahals. In only Kaira District tobacco is a significant crop, claiming 11.0 per cent of the cultivated area. Because of the larger size of holding, and commercial crops like cotton and groundnuts not only the value of gross produce per cultivator is high but also cash receipts by him are proportionately higher still. The cultivators are accustomed to 'market' and are familiar with market habits. This kind of situation is very conducive to the growth of cooperative finance. As is well-known the growth of the cooperative activities in Gujarat is mostly around the cotton crop and it has made its mark largely in the cotton growing districts of Gujarat.

Literacy may help to create informed opinion. We have therefore taken male literacy for different districts just to ascertain as to what influence it has on the successful working of the cooperative movement. Similarly the proportion of scheduled castes and tribes may have adverse impact too. For instance, as high a percentage as 44.5 of such population in Panchmahals may help as to explain the unsatisfactory situation in that district, and still higher percentage of such population in the Surat district may explain as to why this district has remained more or less stagnant in the recent years when other districts have been experiencing rapid advance. Again, it is mostly in these types of districts and particularly in tracts where the moneylenders still continue to have their way.

The rapid progress of the cooperative movement in the Gujarat region can be explained only by a combination of favourable factors as enumerated above. It is extremely difficult to isolate the influence of each of them. All these factors have their influence, some having more; some less. Again, the extent of their influence will not be the same in different areas.

2. Dantwala, M. L. Food Deficit and Commercial Crops of Gujarat-Artha Vijnana, Vol. 3, No. 1, pp. 19-23

Table 6

Capital Structure : Its growth

	1949-50		1955-56		1958-59		1958-59 over 1950-51		Percentage increase in 1958-59 over 1955-56	
	India	Guj.	India	Guj.	India	Guj.	India	Guj.	India	Guj.
Paid-up Share Capital	716.67	44.08	1680.33	124.26	2823.27	297.57	293.9	575.1	68.0	140.3
Statutory Reserves	600.88	34.28	852.81	57.49	928.95	70.93	54.5	106.9	8.9	24.6
Other reserves	211.78	12.64	392.13	34.52	486.38	39.66	293.8	213.8	24.0	14.3
Total owned funds	1529.33	91.00	2925.27	216.27	4238.30	408.16	177.1	348.5	44.9	88.9
Deposits	392.90	58.74	704.99	96.76	863.42	102.28	119.7	72.9	22.4	7.4
Borrowing	1599.52	69.01	4280.14	180.28	8274.43	786.01	417.4	1039.1	93.3	336.7
Working capital	3521.75	219.33	7910.10	501.11	13375.15	1311.22	279.9	498.6	69.1	161.7
Owned funds as percentage to working capital	43	41.5	37	43	32	31	-25.6	-24.4	-13.5	26.9
Deposits as p. c. to working Capital	11	26.8	9	19	6	8	-45.5	60.2	-33.3	57.9
Borrowing as p. c. to working capital	45	31.5	54	36	62	60	37.8	90.5	14.8	66.7
Overdues as p. c. to owners	21.5	15.9	25	17.5	20.0	9.1	-9.1	-40.0	-20.0	-50.0

Table 7

		Average showing progress				Percentage increase in 1958-59 over			
		1949-50		1955-56		1949-50		1955-56	
		India	Gujarat	India	Gujarat	India	Gujarat	India	Gujarat
Per Society									
Membership	41	69	88	49	93	+58.5	+34.5	+32.6	+5.7
Share Capital	615	2204	4142	1051	7439	+230.0	+237.5	+93.4	+79.6
Deposit	337	2937	3159	441	2557	+60.0	+13.0	+22.4	-19.1
Working Capital	3022	10966	16703	4946	32780	+209.3	+198.9	+89.0	+96.2
Loan advanced	1543	4536	12875	5769	29464	+344.6	+549.5	+18.9	+128.8
Per Member									
Share capital	15	29	48	22	81	+106.7	+179.3	+40.9	+68.7
Deposit	8	39	36	9	28		-28.2	-11.2	-22.3
Loan advanced	37	66	192	64	316	+183.8	+378.8	+64.1	+64.6

Table 9

Factors Influencing Credit Supply

District	Percent- tage share in cooperative credit	Percent- age of borrowed funds of coopera- tives	Over- dues percent- age	Percent- age loans advanced by large sized so- cieties	Size of holdings (Acres)	Percentage area under food crops	Percentage of literate persons (Males)	Percentage scheduled castes and moneylenders tribes	Percentage share of credit
Broach	41.2 (1)	82.01 (1)	4.4 (2)	78.69 (1)	9.9 (4)	40.91 (1)	39.8 (3)	40.5 (3)	4.0 (10)
Ahmedabad	13.0 (2)	48.7 (7)	11.8 (5)	22.61 (9)	13.2 (3)	60.0 (5)	43.60 (1)	10.7 (8)	57.4 (2)
Baroda	11.4 (3)	54.2 (5)	7.7 (3)	39.74 (6)	9.8 (5)	43.9 (2)	39.0 (5)	24.2 (4)	35.1 (9)
Mehsana	7.2 (4)	58.4 (3)	8.0 (14)	51.79 (4)	9.1 (6)	74.4 (8)	35.0 (7)	11.4 (7)	25.5 (7)
Surat	6.6 (5)	28.3 (10)	35.7 (10)	44.89 (5)	7.2 (8)	61.2 (6)	39.0 (6)	49.8 (1)	23.4 (8)
Kaira	5.2 (6)	58.6 (2)	15.1 (6)	64.45 (3)	4.4 (10)	67.0 (7)	40.30 (2)	8.3 (9)	67.8 (1)
Sabarkantha	5.2 (7)	49.7 (6)	3.2 (1)	69.09 (2)	8.8 (7)	52.7 (3)	23.69 (8)	19.0 (5)	50.6 (3)
Amreli	3.5 (8)	56.1 (4)	27.3 (8)	23.0 (8)	20.8 (1)	58.2 (4)	39.40 (4)	5.7 (10)	10.9 (9)
Rannaskantha	2.9 (9)	39.0 (9)	22.8 (7)	24.07 (7)	16.5 (2)	90.9 (10)	11.9 (10)	13.9 (6)	45.9 (5)
Pauchmahala	2.3 (10)	42.0 (8)	31.8 (9)	1.5 (10)	6.1 (9)	80.2 (9)	20.0 (9)	44.5 (2)	48.3 (4)

Figures in brackets indicate ranks.

NEED TO DEVELOP RESEARCH TECHNIQUES FOR MARKETING OF AGRICULTURAL PRODUCTS

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Introduction :

The need for improving the marketing practices and procedures for agricultural products was felt in this country long back since the year 1935 when the Directorate of Marketing and Inspection was set up at the centre and marketing departments were created in different State Governments. There has, therefore, been a good amount of thinking done both by the centre and different State Governments for improving old traditional practice of marketing through middlemen who were the only hope for cultivators. By now, number of Agricultural Markets in the rural areas have been regulated and the concept and practices of Co-operative Marketing are also becoming more and more popular. All these efforts have resulted in an orderly method of marketing which ensures a producer to get a reasonable price for his produce by eliminating waste and reducing the cost of distribution.

Gujarat State has made considerable progress in regulating markets and setting up Co-operative Marketing Societies. By the end of Second Five Year Plan there were about 86 market committees covering about 86 major markets and 72 minor markets. With a view to covering the remaining important market centres it is proposed to regulate 31 more markets during the Third Plan Period.

There were about 133 Primary Co-operative Marketing Societies (excluding Cotton Sale, fruit and vegetable sale, and other supplying and sale societies) functioning in the Gujarat State by the end of Second Plan. In order to cover the entire state with Co-operative Marketing Societies, it is proposed to organise 50 new marketing societies during the Third Plan period.

Gujarat State has also established a State Warehousing Corporation for the State. It is proposed to strengthen this Corporation during the Third Plan by contributing to Share Capital of this Corporation for which provision of Rs. 20 00 lakhs has been made in the Plan.

Enough spade work has, therefore, been done by Gujarat State in improving the functioning of the markets and giving financial and other servicing facilities to the cultivators by formation of Co-operative Marketing Societies. All these steps will ensure that the cultivators will get a reasonable return on their produce and will not be compelled to sell the product at a far low rate merely on account of financial stringencies. These steps, although, by far the first necessary are, however, not the only steps which can improve profitability of the cultivators. The problems of marketing are far complex and cannot be completely improved upon only by creating healthy marketing practices and making available finances and other services for raising the crops.

The best illustration of this can be given by observing the marketing struc-

ture for industrial commodities. The tempo of industrial development in our country is growing at a very fast rate. The All India General Index of Industrial Production has gone up by about 81 per cent from 1951 to 1961 (with 1951 = 100 as base). As against this the all India General Index of Agricultural production during this period has gone up only by about 40 per cent (with June 1950 = 100 as base). With the advance in the industrial production in the country techniques of marketing are also developing especially for those commodities where there has been a competition in sales between different producing units. Marketing studies such as consumers preference surveys, motivation surveys etc. are being undertaken by some of the business houses the results of which have undoubtedly proved extremely useful. Recently, techniques of Statistical Quality Control are also becoming increasingly popular to improve the quality and uniformity of the product.

The problems of marketing for agricultural commodities, although, are not strictly comparable with the marketing of industrial products, still, the techniques in marketing which are applicable for industrial commodities can safely be applied to agricultural products.

Before we consider the applicability of some of the marketing techniques for agricultural products, it would be essential to make one point very clear at the outset. An attempt has been made here just to illustrate and to set our minds thinking on some of the marketing problems for agriculture products, in the context of which it would be desirable to introduce some techniques for improving the marketability of these products. The question of feasibility of executing these techniques has to be considered separately from its own aspect. An attempt has, however, been made to suggest the ways and means by which some of these techniques could be made applicable under the existing circumstances.

Market Intelligence Service :

The role of Market Intelligence work needs no emphasis as one of the basic requirements for developing Market Research work in the field of agricultural marketing. In old Bombay State work pertaining to Market Intelligence was assigned to the Market Research Officer in Co-operative department and the same procedure is also probably being followed in Gujarat State.

The basic function of Market Research Officer can be described as :

- (1) Collection and dissemination of prices, arrivals, stocks, surpluses in respect of agricultural and non-agricultural commodities.
- (2) Broadcasting of prices and price reviews under the integrated scheme of price intelligence.
- (3) Publication of statistical information for the use of various interests.

Thus the Market Research Officer of the State is a storehouse of information pertaining to various aspects of market.

Under the existing functions of the Market Research Officer major portion of his time is spent in collecting the basic information pertaining to prices, market arrivals etc, and to ensure complete coverage of this information from various markets.

The information available with the office of the Market Research Officer can be made use of for undertaking some preliminary studies which could be used for Research purposes as well as by the Government from the point of view of framing policies for future action. A few of such illustrations are as follows :

(1) Information regarding prices available for last few years could be used to study the trends in variations of prices for some of the important commodities for a particular region. The investigation of the extent of variation in prices over different period of time could further lead to the reasons for variations whether high variations in prices are due to some seasonal factors or due to some other forces in play. It is needless to mention that effect of variation in prices for one commodity has a chain reaction upon others and this reaction in turn sets in a cycle thereby affecting the whole economy and therefore the consumer. The reasons for variations in prices should therefore be studied over as small a region as possible so as to locate the regional factors such as inadequate transport facilities, lack of storing facilities etc.

(2) Price structure for different commodities is an indicator of overall economy of a particular region or state. Regional imbalances in the economic structure are likely to affect the overall economy of the state. It is therefore necessary to develop indicators for prices over a period of time for as small and compact regions as possible. It may be possible for the State Government to prepare the wholesale price Index Numbers for different commodities possibly for each Taluka on the basis of the information on whole-sale prices available with the office of the Market Research Officer. Index Numbers for different commodities should be prepared on a fairly representative price structure of that particular region or Taluka.

(3) Marketable surplus in a particular region is a function of production and the level of consumption for that region. Market arrivals in turn are dependent on the total marketable surpluses. Besides market arrivals in each market the office of the Market Research Officer is also supposed to maintain data on marketable surpluses. Past trends in total marketable surpluses for different commodities could be made use of in estimating the expected marketable surpluses for different commodities over a certain period of time (say by the end of the Third Plan Period) taking into consideration the likely or estimated targets of production for that region (say Taluka or District) and the level of consumption for that region. The data regarding the norms of consumption for a good number of commodities may be available

through the data collected by the National Sample Surveys and other surveys if any, conducted by the State Government. These estimates of marketable surpluses are of course likely to be very much approximate on account of high variations of the trends in production of agricultural commodities, still however a broad indication of their magnitude could be a good guide for administrators for their future actions.

Need For Consumer Research For Agricultural Products :

To a layman, marketing means buying and selling of agricultural produce. These activities apparently look very simple but when one sets out to inquire into the genesis of buying and selling one comes across a multitude of economic phenomena of human wants and their satisfaction. They in turn bring in a number of economic activities which lie in the realm of concentration, equalisation and distribution.

With the development of regulated marketing procedures the share of the middlemen in the profits of the cultivator is likely to go down. Still, however, the existence of middlemen cannot absolutely be got rid of. It is, therefore, desirable to increase cultivators' profits by a suitable study of marketing conditions which have a direct bearing on the profitability of the cultivators.

In a country like U. S. A. the consumer research for different varieties of products has developed on a very scientific scale. It may not be feasible to apply all these techniques in our country at this stage as it presupposes number of requirements such as adequate finances, availability of trained personnel to carry out the programme and last but not the least the standard of education amongst the cultivators so as to be in touch with various studies of agricultural marketing. In any case, beginning has to be made in this direction as fast as we can.

Amongst different agricultural products and especially in the case of fruits and vegetables there definitely exists certain tastes and preference of consumers for a particular variety of product. The question of preferences exists within different types of products and also between the varieties of the same product. Although the number of consumers giving preference to a certain higher variety of product may not be very large still the price differentials between the better variety and a little inferior variety are sometimes so large so as to provide sufficient margin of profits to a cultivator with a slight change in the production pattern between different products. In other words, the cultivators should be posted with complete details regarding the preferences of consumers for different varieties of products. It should also be necessary to investigate as to what proportion of population would accept a better variety of product for a certain range of variation in the prices. This is regarding the products which normally find their consumption in the same region. The ques-

tion of preferences has still a greater importance especially for those products having export potential.

The problem of consumers' preferences for agricultural commodities is therefore highly linked with the extent of grading and standardisation of agricultural products. Recently grading and standardisation for those commodities which have an export potential, such as tobacco, oilseeds, etc. is being paid very high attention by the Government. Each product has to undergo thorough tests of quality control and the exporters are compelled to observe that the exported commodity meets all the requirements of standardisation according to the laid down specifications. What is necessary in this direction is to convey the preferences of the exporting commercial class to the cultivators.

So far as the cash crops are concerned, only a certain proportion of the cultivated area will have to be put under these crops under Government regulations. The question of increasing profits by allowing more areas to go under cash crops is therefore not feasible. The selection for a cultivator therefore remains within different cash crops and between different varieties of the same cash crop. An indication regarding the preferences of the commercial class for a particular variety of product will therefore be of great use to the Cultivator. State Governments should therefore think of launching consumers' preference surveys from this point of view.

Cost of Cultivation Surveys :

All the points discussed above relate mainly to the introduction of market research techniques whereby the cultivator is likely to benefit more from the sales side. The other very important factor which has direct bearing on the profitability lies in reducing the cost of cultivation. Economic structure can be considered to be ideal only when the reasonable standard of profitability is maintained without counting heavily upon a certain level of sales prices.

It is an unfortunate situation that a very few cultivators today have hardly even a rough idea of the cost of cultivation for a particular crop which interests them the most.

As a matter of fact, cost of cultivation study forms one of the most difficult problems for which a thorough and exhaustive study although very much desirable is not practicable on account of various requirements such as detailed classification of soil, detailed data on costing for different crops which is too much to expect from the present educational level of the cultivators and adequate agency of trained staff to carry out the investigations. As a result of this very few studies on cost of cultivation has been undertaken in spite of Government's very keen desire to undertake them. As a matter of fact such studies should be undertaken for as small and compact regions as possible. Certain tracts in some selected talukas of the State should be selected over a period of time for such studies.

Cost of cultivation will vary not only from taluka to taluka but even from village to village within the same taluka. Hence talukawise study for cost of cultivation cannot be regarded as fully representative for that taluka but it will surely be indicative of certain cost aspects of different crops and such studies will be useful if they are done for certain tracts in some selected talukas from time to time.

Agency for Technical advise and for Implementation of Research Studies :

In the case of Gujarat State the decision has been very aptly taken that the marketing surveys and research organisation of the State will work in close collaboration with the Bureau of Economics and Statistics. The Bureau of Economics and Statistics should besides giving technical advise also help the marketing survey and research organisation in suggesting the various aspects on which market research studies should be undertaken. Secondly, Bureau of Economics and Statistics besides offering technical advise and supervision can also help in implementing various survey programmes. The Bureau has a District Statistical Officer in each district of the State and a Statistical Assistant posted in each Community Development Block. The Bureau can impart suitable training to its District Statistical office which in turn can train Statistical Assistants in the Community Development Block areas, and the agency of these Statistical Assistants in the Block areas can best be utilised for undertaking different market surveys on a talukawise basis from time to time.

It is likely that the Statistical Assistant in the Block areas have many-fold duties to perform especially those assignments which are necessary for the Block work itself. However, market research work should also be treated as a part of the Block work if already not done so, as it can be regarded as one of the most important activities from the point of view of the development of the Block areas. Thus there is no reason why Statistical Assistants in the Block areas cannot be assigned these duties regarding the market surveys in Block areas, they may, if necessary, be provided with necessary assistance from the marketing surveys and research organisation.

RESEARCH PROGRAMMES COMMITTEE

Studies relating to Regional Development

Syt. S. M. Shah, Delhi

The Research Programmes Committee was set up by the Planning Commission in July, 1953 for sponsoring and assisting research on problems of planned development. The Committee consists of eminent social scientists drawn from the fields of economics, sociology, political science and public administration and works in close cooperation with universities and other research institutions as also the ministries in the Government. The Committee is headed by Deputy Chairman of the Planning Commission and meets twice a year to consider the

research proposals submitted for financial assistance from the Committee. Six technical Subcommittees are formulated which go into the merits of the schemes, scrutinise the proposals in detail and make appropriate recommendations to the main body viz, the Research Programmes Committee. Further the Committee is assisted by its five Regional Committees set up at Delhi, Lucknow, Calcutta, Poona and Trivendrum who act as its 'promotional arm' and review the schemes falling within their respective regions and thus keep a close watch over the progress of the schemes. The Project Directors are also invited to the respective Regional Committees' meetings with a view to have mutual discussions with members and among themselves as also to discuss field problems and problems of research methodology.

2. To date, the Committee has sponsored more than 140 research schemes on various categories of subjects. A list of research schemes sponsored by the Committee is given at Appendix I which gives the 'Status' in respect of each scheme. More than 70 reports have been completed of which 40 are already published. Appendix I contains inter-alia research projects pertaining to the field of regional studies. The Committee sponsored in the First Five Year Plan studies in Urban development known more commonly as 'City Surveys' in 21 cities of the country including the four metropolitan cities of Bombay, Calcutta, Delhi and Madras. The reports on all the metropolitan cities have been published except that of Delhi. The following cities were covered under this programme :

Reports Published	Reports Completed	Reports under preparation
Hyderabad	Bombay	Allahabad
Secunderabad	Surat	Cuttak
Baroda	Gorakhpur	Aligarh
Poona	Bhopal	Amritsar
Lucknow	Visakhapattanam	Jaipur
Jamshedpur		Delhi
Hubli		
Kanpur		
Calcutta-		
Madras		

These surveys were sponsored mainly with a view to collect information on the two main problems of the growth of city viz., the rural urban migration and employment opportunities. Results of these surveys have brought to light valuable data pertaining to rural urban migration, employment pattern associated with rapid urbanisation, housing conditions etc. Most of the surveys are based on 5 to 10% sample of households chosen by stratified random sampling. The major findings and conclusions reached in the surveys of Baroda, Gorakhpur, Hubli, Hyderabad-Secunderabad, Jamshedpur, Kanpur, Lucknow and Surat-

have been embodied in the form of research monograph which is proposed to be published shortly. These data have brought to the fore the different characteristics of the cities viz., administrative towns, the port towns, industrial towns and other educational towns.

3. Further, the Committee sponsored 11 projects on problems of Cottage and small-scale industries which are germane to the problems of decentralised development of economy. The study of small-scale industries among other things reveals the nature of local skill, size of markets and availability of raw materials and the proprietorship of these concerns. These studies covered centres spread through out the country viz., Delhi, Sivakasi-Sattur, Moradabad, Saugar, Meerut, Mysore City, Amravati, Salem, Allahabad and Nasik. In the city survey of Bombay the aspect of small-scale industries was studied as well. Reports relating to Delhi, Sivakasi-Sattur and Moradabad have already been published.

4. Irrigation projects have a vital role in influencing the structure of agrarian economy particularly the cropping pattern, the land use and the market arrivals. With a view to studying the primary and secondary benefits of major irrigation projects the Committee sponsored studies in the evaluation of benefits of irrigation projects of five major canals which had reached maturity in the sense that the canals were more than 30 years old. These were Damodar, Tribeni, Sarda, Cauvery-Mettur and Gang canals. The study relating to Gang canal was conducted directly by the field staff employed by the Committee indicating thus its concern for the irrigation studies. Reports on these studies have been completed and are due to be published. Another report relating to Nizam Sagar project has been completed and is under scrutiny.

5. Large-scale investment project have been put in operation which have changed the face of the whole region e. g. the Bhilai Steel plant in Madhya Pradesh has accelerated the development of industry in that areas and provide vast employment opportunities to the population. With a view to understanding the socio-economic effects of such a large investment activity the R. P. C. approved a survey known as Socio-economic survey of Bhilai Region. Field work for this survey was conducted in three rounds beginning from 1955 and the report for the first round has already been completed and published and that relating to rounds two and three have been scrutinised by the Committee of Direction especially set up to guide and supervise the survey. A sociological survey embodying the data relating to the social aspects of change as a result of Bhilai Steel plant has already been finalised. These are expected to be published shortly.

6. Another important survey which the Committee sponsored in 1951 relates to the survey of Uttarakhand region which consists of the districts of Uttarakashi, Chamoli and Pithorgarh of Uttar Pradesh. The problems of Uttarakhand

region are peculiar since the region is at a high altitude and is on a difficult terrain. A committee of Direction has especially been set up with Dr. V. K. R. V. Rao as Chairman which inter-alia proposes to prepare a plan of regional development for the Uttarkhand region.

7. In the Third Five Year Plan while revising its research programme the R P C. made a recommendation to continue the studies relating to regional development. A Technical Sub-committee has been set up to consider proposals falling under this category. The sub-Committee consists of the following :

1. Dr. R. Balakrishna
2. Dr. Baljit Singh
3. Prof. S. K. Basu
4. Dr. B. N. Ganguli
5. Dr. M. H. Gopal
6. Prof. D. G. Karve
7. Dr. D. T. Lakdawla
8. Dr. P. J. J. Pinto
9. Dr. K. N. Raj
10. Dr. K. S. Sonachalam
11. Shri S. Subraminian
12. Prof. C. N. Vakil
13. Dr. D. K. Malhotra, Member Secretary

The Committee considers the research schemes submitted to it and makes appropriate recommendations to the R. P. C. both with respect to methodology adopted, its coverage and the contents. It will be noticed from the following that studies in regional development consist of

- (a) Studies of specific aspects of regional development including development of urban areas and village and small scale industries.
- (b) Studies of the impact of major projects including major irrigation and industrial projects, on regional economy with special reference to subsidiary or ancillary investment.
- (c) Balanced regional development.
- (d) Decentralised development and dispersal of industries.
- (e) Various aspect of internal migration.
- (f) The concept of region as a constituent unit and instrument of national economic development (for team study).

The first meeting of the newly constituted Sub-committee was held on 18th August, 1962 when it considered five research schemes. Of these the committee approved a scheme "Impact of the growth of Kothagudem town on the economy of some of the neighbouring villages by prof. S. V. Ayyar, Director, Indian Institute of Economics, Hyderabad. The other two schemes which have been considered are "Study of structural changes in the organised industries

and the unorganised industries with special reference to the linkage between them " by Dr. S. B. Rangnekar, Department of Economics, Punjab University, Chandigarh, and " Survey of precious and semi-precious stone industry at Cambay " by Prof. R. K. Amin, Head of the Economics Department, Sardar Vallabhbhai Vidyapeeth, Anand. The latter two are being processed.

8. It will thus be seen that the Planning Commission has in its research programme focussed sufficient attention on problems of regional development. Data collected in these surveys are being preserved for the use of future research workers and are extensively in use currently in Town Planning and metropolitan development. The studies have also helped to lay down the design for examination of the returns from irrigation works.

APPENDIX 1

List of Research Schemes Sponsored by the Research Programmes Committee, Under Different Categories of Subjects

(As on 1-8-1962)

Sl. No.	Scheme	Director	Institution	Status
I. Studies in Land Reforms, Rural Development and Cooperation				
1.	Investigation into the working of Bombay Tenancy Act, 1948.	Prof. V. M. Dandekar	Gokhale Institute of Politics & Economics, Poona.	Report published.
2.	An enquiry into the working of the Bombay Tenancy and Agricultural Lands Act, 1948, (as amended upto 1953) in Gujarat (excluding Baroda Distt).	Prof. M. B. Desai	Indian Society of Agricultural Economics, Bombay.	Report published.
3.	An enquiry into the effects of the working of Tenancy Legislation in the Baroda District of Bombay State.	Prof. V. Y. Kolhatkar	M S University of Baroda, Baroda.	Report published.
4.	Study of the working of Cooperative farming Societies in Gujarat.	Shri Vimal Shah.	Enquiry Committee, Ahmedabad	Report published

5	Economic and Social effects of Jagirdari Abolition and land reforms in Hyderabad.	Dr A. M. Khusro	Osmania University, Hyderabad.	Report published.
6.	Consolidation of holdings in Madhya Pradesh (Pilot Survey).	Prof. N. M. Joglekar	Nagpur University, Nagpur.	Report in press.
7.	Effects of land reforms in Saurashtra.	Prof. R. R. Mishra	Dharmendra Singhji College, Rajkot.	Report published.
8.	Economic effects of Jamindari Abolition in Andhra.	Dr. B. Sarveswara Rao	Andhra University, Waltair.	Report approved for publication.
9.	Assessment of implementation of land reforms in West Bengal,	Prof. S. K. Basu	Calcutta University, Calcutta.	Report approved for publication.
10.	Effects of land reforms in Orissa	Dr. Bidyadhar Misra.	Department of Rural Economics and Sociology, Utkal University, Cuttack.	Report under preparation.
11.	Survey of economic and social effects of land reforms in U. P.	Dr. Baljit Singh.	Lucknow University, Lucknow.	Report under scrutiny,
12.	An enquiry into the implementation of Tenancy Reforms Legislation in Marathawada.	Prof. M. P. Padhye.	People's College, Nanded.	Field work in progress.
13.	An enquiry into the implementation of land reforms legislation in Vidarbha.	Dr. K. R. Nanekar.	Nagpur University, Nagpur.	Preliminary work commenced.
14.	Survey of Field Labourers Cooperative Societies.	Prof. S. V. Ayyar.	Indian Institute of Economics, Hyderabad.	Report under revision.

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| 15. Effects of Jagir Abolition on the land utilisation in Udaipur Distt. | Principal A. Rathore. | College of Agriculture, Udaipur. | Field work in progress. |
| 16. Evaluation of land reforms in Bihar. | Prof. Diwakar Jha. | Postgraduate Dept. of Rural Economics, Bhagalpur University, Bhagalpur. | Field work in progress. |
| 17. Research project on rural unemployment. | Prof. M. L. Dantwala. | Prof. of Agl. Economics, Bombay University, Bombay | Report under preparation. |
| 18. Scheme relating to the study of economic and social effects of land reforms in Rajasthan. | Dr. Dool Singh. | Reader in Commerce, Birla College, Pilani. | Report under preparation. |
| 19. An enquiry into the economic and social benefits of consolidation of holdings in Punjab. | Prof. S. S. Gill. | Khalsa College, Amritsar. | Field work in progress |

II. Farm Management Surveys

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| 1. Economics of Farm Management, Bombay. | Prof. P. N. Driver. | College of Agriculture, Poona. | Report for all the three years 1954-55, 1955-56 and 1956-57 published. The three years' combined report is in Press. |
| 2. Economics of Farm Management, Madras | Late Prof. C. W. B. Zaharia. | Madras University, Madras. | Report for all the years 1954-55, 1955-56 and 1956-57 published. The three years' combined Report is in press. |
| 3. Economics of Farm Management, West Bengal | Shri K. C. Basak. | Indian Central Jute Committee, 4, Hastings | Reports for the years 1954-55, 1955-56 and 1956-57 published. The three years' |

		Street, Calcutta.	combined report is in press.
4. Economics of Farm Management, U. P.	Dr. G. D. Agarwal.	Agricultural College, Kanpur.	Report for all the three years 1954-55, 1955-56 and 1956-57 published. The three years' com- bined Report is in press.
5. Economics of Farm Management, Punjab.	Dr. Ajaib Singh and Shri Gurdit Singh.	Agricultural College, Ludhiana and Board of Economic Inquiry, Govt. of Punjab.	do
6. Economics of Farm Management, Madhya Pradesh.	Director of Agriculture, Madhya Pradesh, Nagpur.	Under the Supervision of Gokhale Institute of Politics and Economics, Poona.	Report for the years 1955-56 & 1956-57 publi- shed. The com- bined report for the year 1955-57 is in press.

III Studies in Rural Economy

1. Working of Grain Banks in five districts of Marathawada.	Shri N. P. Ranbhise	Millind Mahavidyalaya, (Aurangabad, Deccan)	Report published.
2. An enquiry into the problems of low income farmers of Kodinar (Saurashtra).	Dr. C. H. Shah	Indian Society of Agricultural Economics, Bombay.	Report published.
3. Low income farmers and low productivity farms in Allahabad (Pilot Survey).	Shri. D. S. Dube	Allahabad University, Allahabad	Report reced. Being a pilot study the report was not consider- ed for publi- cation.

IV. Problems of Urban Development & Employment

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| 1. Socio-economic Survey of Hyderabad-Secundrabad city area. | Prof. S. Kesava Iyengar. | Indian Institute of Economics, Hyderabad. | Report published. |
| 2. Socio-economic survey of Jamshedpur. | Dr. B. R. Misra. | Faculty of Commerce Patna University, Patna. | Report published. |
| 3. Socio-economic survey of Baroda City. | Prof. H. C. Malkani. | M. S. University of Baroda, Baroda. | Report published. |
| 4. Poona-A resurvey : Changing Pattern of employment and earnings in Poona city | Prof. N. V. Covani. | Gokhale Institute of Politics and Economics, Poona. | Report published. |
| 5. Occupational and employment structure of Hubli City. | Dr. B. R. Dhekney. | Karnatak College, Dharwar | Report published. |
| 6. Social contours of an industrial city- social survey of Kanpur. | Dr. D. N. Majmudar. | Lucknow University, Lucknow | Report published. |
| 7. The City of Calcutta : A Socio-economic survey | Dr. S. N. Sen | Calcutta Un . 56-A, Barrack-pore Trunk Road, Calcutta-2. | Report published. |
| 8. Economic survey of Bombay City and survey of Small scale industries in Bombay and its suburbs. | Dr. D. T. Lakdawala. | University of Bombay, Bombay | The report on "Survey of small scale industries in Bombay & its suburbs" published. The report on the Economic survey of Bombay City is in press. |

9.	Regional development of Bhopal	Principal P. C. Malhotra	Government Hāmīdia College, Bhopal.	Report is in press.
10.	Urbanisation of Survey of Small scale industries in Surat.	Prof. R.K. Patil and Prof. K. M. Talati.	Shri K. P. College of Commerce, Surat.	Report in press.
11.	Economic Survey of Madras.	Dr. R. Balakrishna.	Madras University, Madras.	Report published.
12.	Urbanisation of Visakhapattanam.	Prof. K. Nagabushnam	Andhra University, Waltair.	Report approved to be mimeographed (200 copies).
13.	Socio-economic survey of Cuttack.	Dr. S. Misra	Ravenshaw College, Cuttack.	Report being revised in the light of Reader's comments.
14.	Socio-economic survey of Allahabad.	Prof. Mahesh Chand	Allahabad University, Allahabad.	Under revision.
15.	Social and economic structure of Lucknow City.	Dr. Radhakamal Mukherjee and Dr. Baljit Singh.	Lucknow University, Lucknow	Published.
16.	Social and Economic Structure of the City of Gorakhpur.	do	do	Approved for publication.
17.	Regional development of Aligarh City.	Prof. S. M. Tahir Rizvi	Aligarh University, Aligarh.	Revised report received. The Director allowed to publish the report at his own expense.
18.	Trends of urbanisation in Agra.	Dr. D S. Chauhan.	Institute of Social Science, Agra.	Report being revised.
19.	A study of causes, effects, and trends of urbanisation in Amritsar.	Dr. K. S. Gill	Khalsa College, Amritsar, (now in Planning Commission, New Delhi.)	The report under revision.

20. Urban survey of Jaipur City.	Prof. M. V. Mathur.	Rajputana University, Jaipur.	Report under preparation.
21. Economic survey of Greater Delhi.	Dr. V. K. R. V. Rao.	Institute of Economic Growth, Delhi.	Report under preparation.
22. Study of increase in cost of social services in relation to the growth of population in the City of Gorakhpur in the post-Independence period' (1948-59)	Dr. A. B. Misra	University of Gorakhpur, Gorakhpur.	Report under preparation.
23. Survey of employment and unemployment in Travancore-Cochin.	Dr. U. S. Nair	Kerala University, Trivandrum.	Not approved for publication.
24. Survey of urban employment and unemployment in Assam.	Shri V. D. Thawani	Gauhati University, Assam.	Published.

V. Surveys of Cottage and Small Scale Industries

1. Small scale industries in Sivakashi and Sattur	Prof. E. K. Warriar.	Shri Venkateswara University, Tirupati.	Report published.
2. Investigation regarding small-scale industries in Delhi State.	Prof. P. N. Dhar.	Delhi School of Economics, Delhi.	Report published.
3. Small-scale industries in Baroda.	Prof. V. Y. Kolhatkar	Baroda University, Baroda.	Report is being mimeographed.
4. Small-scale industries in Amravati	Dr. L. G. Joshi.	Vidarbha Maha-Vidyalaya, Amravati.	Report approved for being mimeographed.
5. Small-scale industries and Handicrafts in Nasik	Prof. S. G. Puranik	H. P. T. College, Nasik.	Report under preparation.
6. Survey of small scale industries in Salem.	Prof. V. G. Ramakrishna Iyer.	Annamalai University.	Not approved for publication.

7. Small-scale industries in Mysore City.	Prof. G. Ramakrishna Reddy.	Maharaja's College, Mysore.	Report not approved for publication.
8. Pilot project in Biri industry in Saugar district.	(Late) Dr. L. C. Jain	Saugar University.	Report received. Not approved for publication
9. Small-scale industries in Allahabad.	Prof. M. R. Ahmed.	Majidia Islamia College. Allahabad.	Report under preparation.
10. Investigations regarding small-scale industries in Moradabad.	Dr. Baljit Singh.	Lucknow University, Lucknow.	Report published.
11. Cottage and small-scale industries in Saugar distt.	Dr. J. N. Misra.	Department of Economics, Saugar University, Saugar.	Approved for publication.
12. Small-scale industries in Meerut.	Prof. D. M. Roy.	Meerut College, Meerut.	Revised report has been cyclostyled for limited circulation.

VI. Studies in Irrigation Projects

1. Influence of Mettur Project on agriculture in Tanjore Distt.	Dr. Krishna Murthy	Annamalai University, Annamalai Nagar	Published.
2. Evaluation of benefits of Cauvery Mettur Project, Madras.	Prof. K. S. Sonachalam	University, Annamalai Nagar	Report in press.
3. Evaluation of benefits of Damodar Canal.	Prof. S. K. Basu, Head of the Dept. of Economics.	Calcutta University, Calcutta.	Report in press.
4. Evaluation of benefits of Tribeni Canal.	Prof. Diwakar Jha.	Deptt. of Post-graduate Studies in Rural Economics and Cooperation, Bhagalpur University. Bhagalpur.	do

5.	Survey of Economic benefits of Sarda Canal.	Dr. Baljit Singh	Lucknow University, Lucknow.	Report approved for publication
6.	Evaluation of benefits of Gang Canal.	Dr. D. K. Malhotra.	Research Programmes Committee, Planning Commission.	do
7.	A study of costs and benefits of alternative methods of irrigation.	Dr. A. K. Das-Gupta	Banaras Hindu University, Banaras	Report received and cyclostyled being circulated for limited circulation.
8.	Study of some economic aspects of Bhakra Nangal.	Dr. K. N. Raj.	Delhi School of Economics, Delhi.	Report published.
9.	Evaluation of benefits of Nizam Sagar project	Dr. M. F. Jussawala	Nizam's College of Arts, Hyderabad, Andhra Pradesh.	Report under preparation.

VII. Analytical Studies of Economic Development

1.	Inter-corporate Investment.	Dr. R. K. Hazari	St. Xavier's College, Bombay.	Report in press.
2.	Inter-corporate Investment in India (expanded Study)	Dr. R. K. Hazari.	St. Xavier's College, Bombay.	Report under scrutiny.
3.	Import implications of economic development.	Dr. H. Banerjee.	Jadavpur University, Calcutta.	Report under revision.
4.	Impact of Indian economic development on exports (1951-61)	Dr. B. Dutta	Presidency College, Calcutta.	Published.
5.	Economic survey of hire purchase finance in Greater Calcutta.	Prof. S. K. Basu	University College of Arts, Calcutta.	Report under preparation.
6.	Personal savings in India.	Dr. P. S. Lokanathan.	National Council of Applied Economic Research, New Delhi.	Report published.

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| 7. | Derivation of demand and supply Co-efficients of agricultural products in India. | Dr. H. Banerjee | Reader in Economics, Field work in Jadavpur University, Calcutta. | progress. |
| 8. | Inter-Corporate investments in India (Comprehensive study) | Dr. R. K. Hazari. | St. Xavier's College, Bombay. | Work in progress. |
| 9. | An empirical study of the degree of monetisation in the rural sector in Kerala. | Prof. V. R. Pillai. | Kerala University, Trivandrum. | Work to commence shortly. |

VIII. Problems of Regional Development

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|----|---|--------------------------|--|---|
| 1. | Socio-economic survey of Bhilai Region. | Dr. M. M. Mehta. | Directorate of Economic & Statistics, Govt, of M.P. Bhopal. | Part I Report (First Round 1955-56) published. Parts II & III under revision. |
| 2. | Economy of fisher folk in Travancore. | Prof. V. R. Pillai. | Economic Research Council, Trivandrum | Report published. |
| 3. | Socio-economic survey of Rayalaseema | Prof. E. K. Warriar. | Shri Venkateswara University, Tirupati | Report under revision. |
| 4. | Socio-economic Survey of Uttarakhand. | Shri K. A. P. Stevenson. | Vice-chancellor. U.P. Agricultural University, Pant Nagar, U. P. | Field work in progress. |

IX. Problems of Social Dynamics and Social Welfare

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|----|--|-----------------------------------|---------------------------------------|-------------------|
| 1. | Beggar problem in Madras. | Dr. K. N. George and P. T. Thomas | Madras School of Social Work, Madras. | Report published. |
| 2. | Beggar problem in Delhi State | Prof. M. S. Gore. | Delhi School of Social Work, Delhi. | Report published. |
| 3. | Inter-group relationship & Scheduled Castes. | Dr. Mrs. Irawati Karve | Deccan College, Poona. | Report in press. |

4. Socio-economic Survey of prostitutes in Bombay.	Dr. S. D. Punekar.	Association of Social and Moral Hygiene, Bombay.	Report published.
5. Analytical study of culture changes in the Tribal Life in Gujarat (with special reference to the Dhanka tribe)	Shri P. G. Shah.	Gujarat Research Society, Bombay.	Report approved for publication.
6. Cultural change of a backward community in South Malabar.	Dr. A. Aiyappan	Department of Anthropology, Utkal University, Bhubaneshwar.	Report approved for publication.
7. Psychological study of inmates of penitentiaries and jails in Madras State with special reference to the problems of rehabilitation.	Dr. G. D. Boaz.	University of Madras, Madras.	Report under revision.
8. Social and economic conditions of crime in Mysore.	Prof. N. A. Nikam.	Maharaja's College, Mysore.	Report under preparation.
9. Employment of women in Jute Industry.	Shri D. K. Sanyal.	All India Inst. of Social Welfare and Business Management, College Sq. St., Calcutta.	Report not approved for publication.
10. Studies in changes in family structure in West Bengal.	Dr. R. Mukerjee	Indian Statistical Institute, Calcutta.	Report under preparation.
11. Impact of urbanisation on the Tribals in and its Suburbs.	Dr. L. P. Vidyarthi.	Ranchi College, Ranchi.	Report under preparation.
12. Evaluation of cultural changes in Jaunsar Bawar.	(Late) Dr. D. N. Majumdar	Dept. of Anthropology, University of Lucknow, Lucknow.	Report in press.

13. Communication, decision-making and leadership in village communities of North M. P. (with) special reference to C. D. programme).	Prof. S C. Dube.	Department of Anthropology, Saugar University, Saugar.	Report under preparation.
14. Culture change in two tribes of Bihar—the Munda and the Oran.	Prof. S. Sacchidananda.	Head of the Department of Anthropology, Bihar University, Ranchi.	Report approved for publication without grant from R. P. C.
15. Three-Ex-Criminal Tribes in Delhi.	Dr. P. C. Biswas.	Delhi University, Delhi.	Published.
16. Social problems and social welfare resources of Delhi State (Pilot Study).	Prof. M. S. Gore.	Delhi School of Social Work, Delhi.	Report not published.
17. Changing attitudes and cultural assimilation among refugees.	Dr. R. N. Saxena.	Institute of Social Sciences, University of Agra, Agra.	Report published.
18. Change in the traditional cultural pattern, value orientation and personality traits of rural people.	Dr. S. K. Srivastava	Institute of Social Sciences, University of Agra, Agra.	Report under preparation.
19. Social change in Mysore villages.	Dr. K. Iswaran.	Karnatak University, Dharwar.	Field work in progress.
20. Study of the opinions of people in rural and urban areas regarding land reforms.	Dr. B. Kuppuswamy	Prof. of Psychology, Maharaja's College. Mysore.	Report under preparation.
21. A Pilot study in leadership and communication in village communities in Madras State.	Dr. G. D. Boaz.	Professor of Psychology, University of Madras, Madras.	Field work in progress.

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| 22. | A Sociological study of a growing town and its relation to the surrounding rural areas. | Dr. (Mrs) Irawati Karve. | Head of the Dept. of Sociology, Deccan College, Poona. | Tabulation in progress. |
| 23. | A study of Institutionalised women in Bombay City, | Miss N. P. Sidhwa. | Executive secretary, Bombay State Branch of the Indian Conference of Social Work Bombay | Report under revision |
| 24. | Analytical study of cultural change in Tribal life in Dhar, Jhabua and Alirajpur Districts of M. P. | Dr. T. B. Naik. | Principal, Post graduate Basic Training College, Ujjain. | Field work in progress. |
| 25. | Analytical study of culture change in rural and tribal life in Singhbhum and Santhal Parganas. | Prof. Narmadeshwara Prasad. | Patna University, Patna. | Field work in progress. |
| 26. | From simpler culture to industrialisation. | Dr. L. P. Vidyarthi. | Ranchi College, Ranchi. | Field work in progress. |
| 27. | A Socio-economic Survey of Mewat Region. | Dr. Hashim Ali | Jamia Rural Institute, Delhi. | Field work in progress. |
| 28. | A study of the history, economy and culture of the Gonds | Dr. B. H. Mehta. | Tata Institute of Social Sciences, Bombay. | Financial sanction issued in April 1962. Preliminary work commenced. |
| 29. | Industrialisation and social change. | Prof. Kali Prasad. | Indian International Centre, New Delhi | Financial sanction issued in July 1962. |

X. Studies in Political Science and Public Administration

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|----|--|-------------------|---|------------|
| 1. | District administration in Bombay (Report of the Administrative survey of Surat District) | Shri N. B. Desai. | Indian Society of Agricultural Economics, Bombay. | Published. |
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| 2. | A study of coordination of planning at the State level in U. P. | Dr. P. N. Masaldan | Lucknow University, Lucknow. | Report in Press. |
| 3. | Working of village agencies in Kerala. | Prof. V. K. Sukumaran Nair. | Kerala University, Trivandrum. | Report under scrutiny. |
| 4. | Control of public enterprises in India. | Prof. V. V. Ramanadham. | Osmania University, Hyderabad. | Report approved for publication. |
| 5. | Role of village panchayats in community development administration in the District of Saugar (M. P.) | Dr. M. P. Sharma. | University of Saugar, Saugar. | Report under revision. |
| 6. | A study of public participation in the formulation and implementation of planning. | Dr. P. N. Masaldan. | University of Lucknow, Lucknow. | Report under scrutiny. |
| 7. | Working of village agencies with special reference to people's participation. | Dr. B. S. Khanna. | Punjab University, Jullundur City. | Field work in progress. |
| 8. | Working of village agencies in development programme in Vidarbha. | Dr. N. R. Deshpande. | Head of Deptt. of Political Science, Nagpur University, Nagpur | Field work in progress. |
| 9. | Machinery of Planning and Plan-implementation in Kerala at the State level. | Dr. V. K. Sukumaran Nair. | Head of the Deptt. of Political Sci. University of Kerala, Trivandrum | Financial sanction issued in August, 1962. Work to commence shortly. |

XI. Resources for Development

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|----|---|-----------------------------|---------------------------------------|-------------------------------|
| 1. | Rural incomes & savings in the Gujarat District | (Late Dr. V. Sundara Rajan. | M. S. University of Baroda, Baroda. | Not approved for publication. |
| 2. | Mobilisation of small savings in Ahmedabad. | Principal S. V. Desai | H. L. College of Commerce, Ahmedabad. | Report under revision. |

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| 3. | Consumption expenditure and investment in U. P. | E. P. W. da Costa | Indian Inst. of Public Opinion, New Delhi. | Report under revision |
| 4. | Rural income, savings and investment pattern in relation to income groups in Banaras Tehsil. | Dr. A. K. Das Gupta. | Banaras Hindu University, Banaras. | Report under preparation. |

XII. Labour Problems

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|----|---|------------------------|---|----------------------------------|
| 1. | Study of labour management relationship in selected establishments. | Shri P. G. Shah | President, Gujarat Research Society, Bombay. | Report approved for publication. |
| 2. | An enquiry into the pre-employment background of successful personnel welfare officers. | Dr. A. M. Dharma | Research Information Sub-committee of the Indian Institute of Personnel Management, Artistry House, Calcutta-16 | Report under preparation. |
| 3. | A study of labour Welfare personnel in Bombay City. | Shri S. V. Uttam Singh | National Inst. of Labour Management, Parel, Bombay. | Report under preparation. |
| 4. | Case studies of industrial relations in selected industrial units in Madras State. | Prof. K. S. Sonachalam | Head of the Deptt. of Economics, Annamalai University, Annamalai. | Field work in progress. |
| 5. | Case studies of changing industrial relations in
(a) the Hindustan Ship yard (private) Ltd. Visakhapattanam.
(b) Visakhapattanam port Trust | Prof. K. V. Sivaya. | Department of Commerce, Andhra University, Waltair. | Field work in progress. |

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| 6. | Case studies of industrial relations in selected industrial units in Meerut Dist. | Dr R. C. Saxena. | Meerut College, Meerut. | Preliminary work commenced. |
| 7. | Case studies of industrial relations in selected industrial units in Punjab. | Shri T. N. Kapoor. | Punjab University | Preliminary work commenced. |
| 8. | Studies of incentive schemes and methods of wage payments in different industries in Greater Bombay. | Dr. D. T. Lakadawala | Gujarat Research Society, Bombay. | Preliminary work commenced. |
| 9. | Non-wage benefit in clay-based industries around Jabalpur. | Prof. J. N. Misra | Saugar University. | Financial sanction issued in May, 1962. Preliminary work commenced. |
| 10. | Case Studies of Industrial Relations in selected industrial units in Rajasthan. | Principal K. M. Mitra | Birla College, Pilani. | Financial sanction issued in July, 1962. Preliminary work commenced. |

૪ થી ગુજરાતના સંશોધન કાર્યકરોની પરિષદ

તા. ૨૦-૧૦-૧૯૬૨, શનિવાર

સામાજિક ન્યાયનું તત્ત્વજ્ઞાન

વ્યાખ્યાતા : શ્રી. ઉછરંગરાય ન. ઢેબર

સામાજિક ન્યાયનું તત્ત્વજ્ઞાન

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સમાજ નિરંતર વહેતી ગંગા

૧ સમાજ નિરંતર વહેતી ગંગા છે ગંગોત્રીમાંથી નીકળતાં ભાગીરથીનાં પાણી શરૂઆતમાં રમતા રમતા ઝરણાંઓ મારફત આગળ વધે છે અને જેમ આગળ વધે છે તેમ એનામાં જોશ આવતુ જાય છે અને પૂરપાટ દોડવા માડે છે, અને એના પ્રવાહના વેગમાં અનેક નાની મોટી વસ્તુઓને ખેંચતાં જાય છે, તેમ સમાજ-ગંગાનો પ્રવાહ પણ શરૂઆતમાં મદ ગતિએ આગળ વધે છે અને પછી જોશ પકડે છે, અને અનેક વસ્તુઓને ખેંચી જાય છે. સ્થિતિ-સ્થાપક જેવું સમાજમાં કશું નથી, સમાજ સતત પરિવર્તનશીલ છે, સતત ગતિશીલ છે, હંમેશાં એમાં પલટા આવતા જાય છે. કોઈ વખત સમાજનો પ્રવાહ મંદ પડ્યો તો કોઈ વખત પૂરપાટ દોડે છે. સામાજિક સ્થિરતા એક સાપેક્ષ વસ્તુ છે.

૨. દુનિયાની દૃષ્ટિએ જે સિદ્ધ થઈ ચૂક્યું છે તે ભારતવર્ષમાં છેલ્લાં પંદર વર્ષમાં અનુભવાયા છતાં પણ ભારતની જનતાને અજાણું પડ્યું નથી; એમાં ભારતવર્ષની પ્રજાનો પણ એટલો દોષ નથી ભારતનું છેલ્લા દશ દાયકાનું નેતૃત્વ આજની વિચારશક્ત્યતાને માટે કંઈક અંશે જવાબદાર છે. પરિણામે ભારતમાં એક માનસ ઊભું થયું છે કે “જૂનું લોપવું નહિ અને નવું ધારવું નહિ” પરિણામે ભારત પરિવર્તનને સ્વાભાવિક રીતે સ્વીકારવાને બદલે પરાણે જ સ્વીકારે છે. પરિવર્તન અને ગતિશીલતાના અખાધિત સિદ્ધાંતોને સ્વાભાવિકપણે સ્વીકારી ચાલે તો એને માટે એ પ્રવાહોને કુનેહપૂર્વક વાળવાનું, સાચવવાનું, એનાથી સમાજને નુકસાન ન થાય અને સમાજને એનો પૂરેપૂરો લાભ પહોંચે એ જોવાનું સરળ અને આ માનસિક તૈયારી ન હોવાથી છેલ્લાં હજાર વર્ષથી આ કાર્ય વિસારે પડ્યું છે.

૩. આ માનસમાં કંઈક ફરક થયો હોય તો છેલ્લાં દોઢસો વર્ષથી થવા લાગ્યો છે. રાજા રામમોહનરાય, સ્વામી વિવેકાનંદ, સ્વામી દયાનંદ, લોકમાન્ય તિલક અને પૂજ્ય ગાંધી-જીના સતત પુરુષાર્થનું આ પરિણામ છે હિંદુસ્તાનનો એક સમૂહ સમજવા લાગ્યો છે કે ભારતની સ્થિરતા અને ભારતના વિકાસનો વિચાર આ પરિવર્તનશીલ ગતિશીલ સમાજની ભૂમિકાની વચમાં કરવો પડશે. ભારતની સ્થિરતા અને ભારતના વિકાસનો વિચાર કરનાર તમામ નરનારીને માટે આ વસ્તુ પ્રથમ સમજવા જેવી છે

એ કર્તવ્યો

૪ આમ આપણી સામે એક સાથે બે કર્તવ્યો ઊભાં થાય છે. પરિવર્તનશીલ ગતિ-શીલ સમાજમાં પલટાના પ્રવાહોની દિશા ઓળખવી, એના વેગ પારખવા, એની વચમાં તરવાની શક્તિ હાંસલ કરવી, અને ‘બીજું’, કેવળ આપણે જ તરી જઈએ છીએ એમ નહિ પણ સમાજનાં તમામ આત્માવૃદ્ધો, નાનગા સમગા, ગરીબ તરંગર, જાની અજાની, દુર્બળ

પછાત તેમજ સમાજનાં તાર અનાર બધાંને સાથે રાખવાં છે કે જેથી પ્રવાહના વેગમાં ભીંસાઈ, જેંચાઈ, તણાઈ, અફળાઈ ઘાસની ગંછની નાફક પૂજો પૂજો તણખલું તણખલું થઈ એ વેરવિખેર ન થઈ જાય અંગ્રેજીમાં આને Social balance (સામાજિક સમતુલા) કહે છે. આપણા સમાજનું માળખું એવી રીતે ગોઠવાયેલું હોય કે ન તો પ્રવાહના જેંચાવ-માં સમાજની સમતુલા તૂટે, ન તો સમાજ વેરવિખેર થઈ જાય; ઊલટું, પરિવર્તન અને ગતિશીલતાની દરેક ભીંસ આપણને નજદીક લાવે, આપણને મજબૂત બનાવે, આપણી અંદરની શક્તિ કસાય, એમાં વધારો થાય અને આપણી સાથે આપણો સમાજ આગળ ને આગળ વધતો જાય.

૫. સમાજવાદની અનેક વ્યાખ્યાઓ થઈ ચૂકી છે. એક અંગ્રેજ અર્થશાસ્ત્રીએ કહ્યું છે કે સમાજવાદની એટલી વ્યાખ્યાઓ થઈ ચૂકી છે કે એની દશા ભાતભાતનાં માથાઓ ઉપર ગોઠવાઈ ચૂકેલ મચડાઈ ગયેલ ટોપીના જેવી થઈ ગઈ છે. હું એની વ્યાખ્યામાં ઉમેરો કરવા માગતો નથી, પણ મને કાંઈ પૂછે કે સમાજવાદ એટલે તું શું સમજે છે, તો હું કહું કે સમાજવાદનો મારો અર્થ છે 'સમાજપરિવર્તનનું' શાસ્ત્ર.' સમાજપરિવર્તનના વિજ્ઞાની-ઓએ નાના મોટાં પરિવર્તનોનો અભ્યાસ કરી સમાજદૃશ્યના સિદ્ધાંતો સમાજનો સામે વિસ્તૃત રીતે મૂક્યા છે. કાંઈ પણ વિજ્ઞાનની પ્રવૃત્તિ માફક એમાં નવાં નવાં દર્શન ઉમેરાતાં જશે. માર્ક્સવાદ એ એનું પહેલું દર્શન હતું એમ પણ માનવાને કારણ નથી અને છેલ્લું દર્શન એમ પણ માનવાને કારણ નથી. સમાજપરિવર્તનના સિદ્ધાંતથી જ એ વિમુખ છે.

સમાજપરિવર્તનના સિદ્ધાંતો

૬. સમાજપરિવર્તનના ઇતિહાસ ઉપરથી એક સિદ્ધાંત ફલિત થાય છે : સમાજ વિચારથી પલટાય છે, સમાજ વૈજ્ઞાનિક સંશોધનોથી પલટાય છે, સમાજ યત્રકળાના વિદ્યાલયથી પલટાય છે, સમાજ નવા નવા અગ્નિના પ્રદારો (Energies) થી પલટાય છે; આ અને આવાં સમાજપરિવર્તનનાં મૂળમાં પડેલા હોય છે. સમાજને એ દિલોળે ચડાવે છે, સમાજના મંદ પ્રવાહોમાં જોશ લાવે છે, અને સમાજને આગળ ને આગળ ધોત્તે જ જાય છે. અને આ પ્રક્રિયામાં સમાજના કાચા કાંઠા કોલવાય છે, સમાજના પોલા પાયામાં ખાડો પડે છે, સમાજના મોળા બંધ ધસી પડે છે, અને આ નુકસાન લદ્દથી વધી ગયું તો સમાજમાં ફૂટ પડે છે અને કાંઈ વખત કડડ ભૂસ થઈને તૂટી પડે છે કેમ અને ચીનનાં દૃષ્ટાંતો આપણી સામે મોજૂદ છે. મિસર અને રોમનો ઇતિહાસ આપણે વાંચી આપણી રમૂનિ તાજ કરી શકીએ છીએ.

૭. પરિવર્તનના આ સિદ્ધાંતો બધા પૂરજોગથી ભારત ઉપર કામ કરી રહ્યા છે. પચાસ વર્ષ પહેલાંનું કુંભકર્ણની નિદ્રામાં પોલેલ ભારત આજે સજાગવ્યા માંડ્યું છે. કઈ વસ્તુને જોરે ? રાજા રામમોહનરાયનું પુરાતન આર્થ સંસ્કૃતિની આપ્ય મિત્રતા અને પશ્ચિમ વિજ્ઞાન અને યંત્રવિદ્યા વચ્ચે મેળ ખેસાડવાનું સ્વપ્ન દયાનંદ અને વિવેકાનંદ દ્વારા સાકાર સ્વરૂપ પકડવા માટે છે. અંદિજાણનું 'વંદે માતરમ્'નું સ્વપ્ન પ્રથમ ફટકાએ કાનિષ્ઠાગીઆ

ઝીણે છે અને તિલક મહારાજ દ્વારા એ નવીન રીતે પ્રગટે છે. દાદાભાઈ નવરોજીનું 'ગરીબ' હિન્દુસ્તાન અનેક અર્થશાસ્ત્રીઓને જન્મ આપે છે. છેવટે આ બધાના પરિપાકરૂપે ભારતને ટાગોર અને ગાંધી પ્રાપ્ત થાય છે અને ભારત આઝાદ પણ બને છે, અને ભારતનું નેતૃત્વ આધ્યાત્મિકતા અને વિજ્ઞાનની વચ્ચે સમતુલા પેદા કરી વિકાસની નવી ભૂમિકા પોતાના અને વિશ્વના માટે સર્જવાના કામમાં ગૂંથાયું છે. પરિપક્વ વ્યક્તિત્વના પરિપક્વ મગજમાંથી સ્ફુરેલ વિચારમાં કેટલી તાકાત ભરી છે એના કિસ્સાઓ અથાગ છે. ભારતવર્ષમાં આપણે જોયું કે આ બધાના પુરુષાર્થના બળે અગ્રેજી સદ્વતનત સંમાપ્ત થઈ, રાજાશાહી સંમાપ્ત થઈ, પ્રમાણમાં સામંતશાહી પણ સંમાપ્ત થઈ.

૮. એવી જ રીતે વિજ્ઞાન અને યંત્રકળા પણ ભારતની અંદર પરિવર્તનની શરૂઆત કરી રહ્યાં છે, એની અસર ગામડે ગામડે પહોંચવા લાગી છે : કળવણી વિશે જે ભાગ્યેજ વિચારતા હતા તેઓ નિશાળોની માંગ કરી રહ્યા છે, આરોગ્યનો ખ્યાલ સરખો પણ ન હતો તેઓ આજે દવાખાનાં માગી રહ્યા છે; ઢસરડો કરવાને ટેવાયેલ આજે ઢસરડામાંથી બિગરવાને શહેરો અને કારખાનાઓ તરફ જોઈ રહ્યા છે; છાણું અને લાકડાં ઉપર આધાર રાખતી પ્રજા તેલ વીજળી અને ગેસ તરફ જોઈ રહી છે.

૯. પણ રખેને આપણને લાગે કે આજની ભારતની રફતાર એ આ નવાં પરિવર્તનોની ટોચ છે. આ થઈ રહેલ ફેરફારો તો હજી શરૂઆતના ફેરફારો છે. પ્રજાને એ હજી માત્ર સ્પર્શ્યા છે. જ્યારે એ પ્રજાની વિચારધારાનો ભાગ બનશે ત્યારે જ આપણને ખરાં પરિવર્તનોનો અને એની ગતિનો કંઈક ખ્યાલ આવશે. નવા - નવા વિચારો — દુનિયાભરના ફલવાતા વિચારો હજી તો ઉપરના એક ટકાની વચમાં જ ફરી રહ્યા છે. રેડિયો ટેલિફોન છાપાં હજી બધે નથી પહોંચ્યાં. વિજ્ઞાન વીજળી હજી અમુક જ હદ સુધી સીમિત છે. જ્યારે એ ચારે તરફ પહોંચવા લાગશે, જ્યારે ચારે તરફ વિજ્ઞાન અને યંત્રવિદ્યા પહોંચી જશે, જ્યારે ચારે તરફ આણુશક્તિ પહોંચશે, ત્યારે આજની આપણી ગતિ તો 'પા-પા પગલો' જેવી લાગશે.

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પરિવર્તન અને સમાજના જીવંત જીવંત થર પર એની અસર

૧૦. પરિવર્તનનું એક એક મોજું સમાજના માળખા ઉપર થોડી ઝાઝી અસર-કાર્ય જ બાય છે અને આ પરિવર્તન જે ગણનાપાત્ર હોય તો સમાજની જૂની સમતુલા હળમળે પણ છે. એની એક અસર તો સમાજના ઉપજા થરના માણસો ઉપર થાય છે. હળમળતી સમાજ-સમતુલાની વચમાં પોતાની સ્થિતિ કાયમ રાખવા એ સ્વાભાવિક રીતે મહેનત કરે છે. એનું એક એટલું જ સ્વાભાવિક પરિણામ એ આવે છે કે એમના પ્રયત્નનો બોને નીચે દબાયેલા થર ઉપર ઓછેવત્તે અંશે પડે છે. નીચે દબાયેલો વર્ગ આનો વિરોધ કરે છે અને એક સંઘર્ષની પરિસ્થિતિ પેદા થાય છે. કોઈક વખત પરિવર્તનમાં મોજાં સમાજના કોઈ થરને તાગી જવા કોશીશ કરે છે. તણાઈ જવાના ડરથી એ પ્રતિ-આક્રમણ કરે છે અને

પોતાની જાતને ખેંચાઈ જતી અટકાવવાને માટે જે કાશીશો કરે છે તેમાંથી ઊત્તરી અસ્થિરતા અને અરાજકતા ઊભી થાય છે. કાંઈક વખત સમાજનો કાંઈ થર તણાઈ જાય છે, ત્યાં બાકારું પડે છે, અને એમાંથી ફટ પેદા થાય છે. કાંઈ વખત પરિવર્તનનાં મોઝાં સમાજના કાંઈ થરને એકલો ધસારો આપીને ચાલ્યાં જાય છે. એ ધસારો મામૂલી હોય તો જુદી વાત, પણ જો એ ખરેખર ઠીક ઠીક હોય તો સમાજનાં જે અંગ ઝૂરે છે તેમાંથી લોહી નીતરે તેમ સમાજની શક્તિ ઝરી જાય છે.

૧૧. આ ચારે પ્રકારની અસર ભારતવર્ષ ઉપર થઈ છે. ભારતનો શ્રીમંત વર્ગ પોતાની સ્થિતિ કાયમ રાખવાને માટે પ્રયાસ કરી રહ્યો છે. શ્રમજીવી વર્ગ એના તરફ વિરોધની નજરે જોઈ રહ્યો છે. શક્તિશાળી વર્ગ પોતાનાં સાધનોને જોરે, પોતાની બુદ્ધિમત્તાને જોરે, કંઈક અંશે એને સત્તા સાથે સંબંધ છે તેને જોરે, કંઈક અંશે વગવસીવાને જોરે આજે પોતાની અસલી પકડ રાખવા માટે મહેનત કરે છે. અને બીજા બાજુ શ્રમજીવીઓનો એક સમુદાય—સંખ્યાબળના જોરે, સંગઠનના જોરે, સત્તા સાથેના એના સંબંધને જોરે અને કંઈક નવા ઉત્તમ થયેલ વગવસીવાને જોરે એ—પણ પોતાની જાતને આગળ લાવવા માટે કાશીશ કરી રહ્યો છે. એવી જ રીતે સાંપ્રદાયિકતાની દૃષ્ટિએ વિચારનાર સમાજનાં જૂથો નવા પ્રકારના વિચારો પોતાને ખેંચી ન જાય એને માટે પ્રતિ-આક્રમણની તરફ ઢળતાં જાય છે, સામંતશાહી ગઈ તેના અવશેષ સર્મા, એના ઉપર આધાર રાખતાં બળો પોતે જોવાઈ ન જાય એટલા માટે કંઈ ને કંઈ કાશીશ કરી રહ્યાં છે, અને સૌથી વિશેષ, પરિવર્તનને પરિણામે જેમને ધસારો પહોંચી રહ્યો છે તેવાં મધ્યમવર્ગનાં માણસો, એ જમીન-ખેતીકાર મજૂરો—હરિજનો અને આદિવાસીઓ પણ કંઈક ને કંઈક રીતે સદન કરી રહ્યાં છે. આ બધું તો પરિવર્તનને પરિણામે અને છે, પણ સમાજમાં એ વિશેની જોડાએ તેટલી ખળવદારી નથી. અને મોટો ભય તો એ છે કે હજુ, બળિયાના બે ભાગ અને નખળાંનો કાંઈ ધણી નહિ તે જ રીતે, સમાજનો મોટો ભાગ વિચારી રહ્યો છે. ભારતને માટે આ વસ્તુ આપત્તિજનક છે.

૧૨. ભારતનું નેતૃત્વ આ વસ્તુ સમજ્યું છે. છેલ્લાં હજાર વર્ષમાં આવેલ પરિવર્તનો ધ્યાનમાં તેમાં ભારતના જે થરોને સહાયતા મળી નથી અને એ જ પરિણામે વિખમતાઓ ઊભી થઈ છે તે વિશે એ જાગૃત છે. અને એ ક્ષતિ દૂર કરવા બાબતુ પુરુષાર્થ કરી રહ્યું છે, પણ દરમ્યાનમાં પણ પરિવર્તનો તો થતાં જ જાય છે.

ન્યાયના અભાવનાં પરિણામ

૧૩. સામાજિક ન્યાયનો તેથી અર્થ એ છે કે સામાજિક પરિવર્તનોની વચમાં સમાજનાં તમામ બળોની ન્યાયપૂર્વકની રક્ષા. આ રક્ષા નથી થતી તો વિખમતાઓ વધે છે : સમાજનાં નખળાં બળોમાં અને પછાત રહી ગયેલા સમુદાયમાં પ્રથમ નિરાશા અને પછી વિરોધની લાગણી જન્મે છે. પરિવર્તન-મોંઝાને આકરી હોય તો અરસપરસની વધારાનીઓ પણ ધસાવા માંડે છે, સમાજ સૌણંદિયોઈ ધવા લાગે છે, અને છેવટે સમાજનો પોતાનો પણ નાશ થાય છે.

સર્વાંગીણ વિચારણાની જરૂરત

૧૪. ભારતીય સમાજ સામાજિક સમતુલાનો વિચાર કઈ રીતે કરે છે? કેટલાક ભારતની દૃષ્ટિએ જરૂર વિચારે છે, પણ કેટલાયે એવા છે કે જે ગ્રાંત, ભાષા, નાતજાત, ધર્મ, ઉદ્યોગપતિ, મજૂર, ખેડૂત વગેરે વિભાગીય દૃષ્ટિએ વિચારે છે. ખરી વસ્તુ એ છે કે સામાજિક સમતુલા એક સર્વાંગીણ દૃષ્ટિએ વિચારણા માગે છે. એકાંગી રીતે જેનારો ભારતીય સમાજની સમતુલા સાચવી શકવાનો નથી. સમાજના વિચારવંત પુરુષોએ જોખમોમાંથી સમાજને બચાવવા માટે આ સર્વાંગીણ વિચારણાનો માર્ગ પણ બતાવ્યો છે. એક જોખમ હતું કે પરિવર્તનમાંથી હરાયેલી સમતુલાને સ્થિર ન કરવામાં આવે તો સમાજના પાયા જ તૂટી પડે. બીજું જોખમ હતું કે વિભાગીય દૃષ્ટિએ એનો વિચાર કરવામાં આવે તો પણ સમાજમાં ખોટી હરીફાઈઓ ઈર્ષ્યા વગેરે બધું પેદા થાય આ બંને જોખમોનો માર્ગ છોડી સર્વાંગીણ વિચારણાની દૃષ્ટિએ એમણે સામાજિક ન્યાયનો માર્ગ ગ્રહણ કર્યો. અતિશય વિષમતા એ સમતુલાના અભાવનું એક લક્ષણ છે. અને એને સામાજિક ન્યાયની દૃષ્ટિએ તપાસવાની એમાંથી જવાબદારી ફલિત થાય છે.

સામાજિક અન્યાય દૂર કરવાની જુદી જુદી રીતો

૧૫. આ અન્યાય દૂર કરવાના બે રસ્તા બતાવવામાં આવે છે. પૂંજવાદમાં માનનાર કહે છે : “તમે ચિંતા ન કરો; માત્ર બે વસ્તુઓ સંબંધમાં વ્યવસ્થા કરો; બાકી બધું આપોઆપ થાશે પડી જશે.” સામ્યવાદ પણ, વિચિત્ર લાગશે કે, કહે છે કે “તમે ચિંતા ન કરો, માત્ર બે વસ્તુઓની વ્યવસ્થા કરો; બાકી બધું આપોઆપ થાશે પડી જશે.” પૂંજવાદ કઈ બે વસ્તુ સૂચવે છે? “એક તો Incentives અને બીજું કામ કરનાર મજૂરવર્ગ.” સામ્યવાદી કઈ બે વસ્તુઓ સૂચવે છે? “એક તો ઉત્પાદન-વહેંચણી અને હાંડિયામણ ઉપર સરકારનો સંપૂર્ણ કાબૂ અને માલિકી અને બીજું કામ કરનાર મજૂરવર્ગ.”

૧૬. આપણે જોવું જોઈશે કે આ બેમાંથી કોઈ પણ પ્રથા સામાજિક ન્યાયના સિદ્ધાંતને કેટલી અનુકૂળ છે કે સામાજિક ન્યાયના હેતુ સિદ્ધ કરવામાં ઉપયોગી થઈ શકે એમ છે. Incentives નિર્દોષ શબ્દ છે. એનો વાજબી અર્થ લઈએ તો માત્ર રૂપિયા, આના, પાઈ (monetary incentive) ન થવો જોઈએ. અને એનાથી આગળ વધી સંપત્તિમાનમાં સંપત્તિમાન દેશમાં જે incentive (વળતરનું આકર્ષણ) અપાય છે તે અથવા તેટલા પ્રમાણમાં દુમિયાના ગરીબમાં ગરીબ દેશમાં અપાય એ ન થવો જોઈએ, નહિતર વિષમતા દૂર થવાને બદલે વધે જવાની, અને સાથેસાથ નવા પ્રકારની વિષમતા ઊભી થવાની. એવી જ રીતે પૂંજવાદની ભૂમિકાની વચમાં ‘કામ કરનાર આપો’નો અર્થ ‘મનુષ્યની સ્વાભાવિક જરૂરિયાતની ઉપેક્ષા કરીને કામ કરો’ એવો નહિ થવો જોઈએ, નહિતર એમાંથી પણ વિષમતાનો અંત તો નહિ આવે, પણ ઉપરાંતમાં બીજા પણ અનર્થ વધશે.

૧૭. એવી જ રીતે ઉત્પાદન-ચક્રેચ્છી અને ફાંડિયામણનાં સાધનો શાસનની માલિકીનાં બનાવવાનો અર્થ પણ એ થયો કે અર્થકારણના ક્ષેત્રે લોકોના કાબૂનો અંત આણવો અને એક ટોળી, પછી અત્યારે ગમે તેટલી એ પ્રજા પ્રત્યે હમદી રાખતી હોય તેને ભરોસે પ્રજાનું ભવિષ્ય સોંપી દેવું. રામના પછી રામ આવવાની ખાત્રી હોય તો આ સાહસ પરવડે, પણ એવી કોઈ ખાત્રી આપી શકે નહિ. અને સામ્યવાદની ભૂમિકાની દૃષ્ટિએ 'કામ કરનાર આપો' એટલે 'એક જ કામ આપનાર માલિકને ભરોસે રહો.' આ રસ્તે ભારતને ન-ફટકે જવું પડે તો જુદી વાત છે, પણ સ્વેચ્છાથી પ્રવૃત્ત કરવા જેવો એ નથી.

:૪:

ગાંધીજીનો માર્ગ

૧૮. આપણે સૌ ગુજરાતના વતની છીએ, ગુજરાતમાં મૂળી રહ્યા છીએ. ગાંધીજીએ લગભગ દોઢ દાયકા આપણને આપ્યો; સામાજિક ન્યાયના ક્ષેત્રમાં એમના તરફથી કંઈ શીખવાનું છે ?

૧૯. માણસનું મન માણસનું Fly wheel (ગતિચક્ર) છે. મનમાં ઊભા થતા વિચલ્પો-કાયડાઓ-વિકારો-ઉપદ્રવો આ બધામાં જગતભરમાં એક સામ્યતા પડી છે; પરંતુ કેટલાક અનુભવો આપણને થઈ ચૂક્યા છે જે પશ્ચિમના મુલકોને અને ચીન રશિયાને થવા બાકી છે. એવી જ રીતે કેટલાક અનુભવો એમને થઈ ચૂક્યા છે જે આપણને થવા બાકી છે. એટલે આપણે ગાંધીજીના વિચલ્પને જે આસાનીથી ખંખેરી નાખીએ છીએ તેમાં ડહાપણ છે એમ કહેવું દુરસ્ત નહિ ગણાય. ગાંધીજીનો માર્ગ ઘરમાં-પડોશમાં-ગામમાં-દેશમાં જભરાતી વિષમતા તરફ આપણુ લક્ષ દોરે છે, એના મૂળમાં જે માનસ પડેલું છે તે તરફ આપણું લક્ષ દોરે છે. એનો ઉપાય વિદેશની કોઈ જડીબુટ્ટી નહિ-કોઈ કળ-કારખાનાની જડીબુટ્ટી નહિ કરી શકે, એવું આપણને ઠેરવી ઠેરવીને કહે છે; એનો ઉપાય ચોપડીમાં પણ નથી એમ કહે છે. એનો ઉપાય સમજ્યા છે તેઓ, એ પોતાથી જ શરૂ કરવામાં પડેલા છે, એમ ભારપૂર્વક સૂચવે છે.

૧૯. આ તો કોઈ Economic theory (આર્થિક સિદ્ધાંત) ન થઈ ! કોઈ અર્થશાસ્ત્રનું-વિજ્ઞાન આપણા દર્દમાં બહુ ઉપયોગી નીવડવાનું નથી. ભારતીય સમાજની વિષમતાઓ અનેરી છે. આપણા ઘરમાં જ જોઈએ : આપણાં બાળકોની માતાઓ તમ્બે આપણે ન્યાય કરી રહ્યા છીએ ? એક વિચાર આ અનર્થના મૂળમાં પડેલો છે : " ન જ્ઞાં સ્વાતન્ત્ર્યમર્હતિ." ભારતમાં પક્ષી સંપૂર્ણ સ્વતંત્રતાથી મદાવી શકે છે, ભારતમાં છીડીને પણ સંપૂર્ણ આઝાદી છે, પણ આપણાં જ બાળકોની માતાઓને મનુષ્યમતાના નામે, પશુને નામે, કુદૂંગની ઈજ્જતને નામે, લોકમનના જોરે, કાયદાના જોરે આપણે પજાન રાખી છે. આ વિચારના સર્જકની મહત્તા વિશે કશું કહેવાનું નથી. એમણે જે આપણને જોઈતું કેટલું

આપું છે તે માટે આપણાં શીશ એમને નમે છે, પણ આ વિચારે આપણા સમાજના વહેણને જે વળાંક આપે છે અને એનાથી જે અનર્થ થયા છે તેને વિશે કાણ શું કહી શકશે ? આને સ્ત્રી વિશેની આપણી કલ્પના આદિવાસીઓથી પણ પછાત છે.

૨૦. અને પછી બાળકો લઈએ ! જેની મા, કારણ કે ભારતીય માતાનો પુત્રી બની માટે, પરત્ર બની તેનો વેત્તો સ્વતંત્ર કદી સલવી શકે ? માતા અને એના વંશજ બંનેના આત્માને આપણે પરિણામે પરત્ર બનાવ્યા. વિધવાતાનાં કળ વિધવાતાએ જ આવ્યાં છે.

૨૧ પછી બાળકના પિતાને લઈએ. એ પણ કોઈ પરત્ર માતાનો પુત્ર હતો અને છે; એમાં ખુમારીની કેટલી આશા રાખી શકાય ? પરિણામ ? સેકડો વર્ષની ગુલામી, અને એનું પરિણામ ? મનુષ્ય જન્મે છે, એને ભૂખ લાગે છે, એને ટાઢ વાય છે, ગરમી લાગે છે, એને ભણાવવો પડે છે, માંદે સાંજે એને દવાદારની જરૂરત રહે છે, ખુશામમાં એને કંઈક આશાએ જોઈએ છે. ભારતના ૬૦ ટકાથી પણ થોડા વધારે પિતાઓ અને કુટુંબના વડીલોની હાલત આ બધું પૂરું કરવાની નથી. હમણાં જ એક ગણતરી કરવામાં આવી હતી : માણસને પૌષ્ટિક ખોરાક માત્ર લેવો હોય તો મહિને રૂ. ૩૫) માથાદીક જોઈએ. ભારતના સૌથી નીચે છ ટકાની માથાદીક માસિક આવક રૂ. ૧-૬૦ ન. પૈ. છે; એનાથી ઉપરના દશ ટકાની રૂ. ૮-૬૦ ન. પૈ. છે; એનાથી ઉપરના ત્રીજા દશ ટકાની રૂ. ૧૧-૭૦ ન. પૈ., ચોથા દશ ટકાની રૂ. ૧૩-૨૬ ન. પૈ.; પાંચમાની રૂ. ૧૭-૩૫ ન. પૈ. છે; અને છઠ્ઠા દશ ટકાની એવી જ માસિક માથાદીક આવક રૂ. ૨૧-૫૦ ન. પૈ. છે આ આવકમાં આ ધોરણે આપણે ચાલીએ તો વધારો જરૂર થતો જશે. ૧૯૮૦-૮૧ ની સાલમાં જ્યારે આજના બાળક પોતે જ પિતા બન્યા હશે ત્યારે સૌથી નીચેના દશ ટકાની માથાદીક માસિક આવક રૂ. ૧૬-૭૫ ન. પૈ., એનાથી ઉપરનાની રૂ. ૨૨-૭૫ ન. પૈ., અને એનાથી પણ ઉપરનાની રૂ. ૩૦-૦૦ ન. પૈ. હશે. સ્વરાજ્ય પછી અને આટલા સમય પછી પણ આ સ્થિતિ છે તો સમાજના આ થરની હાલત સ્વરાજ્ય પહેલાં અને એ પહેલાંના દાયકા અને સદીઓમાં કેવી હશે ?

૨૨. વિચિત્ર વાત તો એ છે કે આ બધું છતાં લોકો વિશ્વાસ અને આશા રાખી શાંત બેઠાં છે. બ્રિટિશરોના વખતમાં આ લોકો શાંતિથી રહ્યા, કારણ કે એઓની અણુ-સમજનો ફાયદો બ્રિટિશરો ઉઠાવતા હતા, પરંતુ હવે એ તો ગયા વચમાં પૂ બાપુ નહોત તો, કહેવું મુશ્કેલ છે કે, જે શાંતિ આજે આટલી લોકોની કપરી કસોટીની વચમાં જોવા મળે છે તે શાંતિ આજે રહી ન હોત. ચરખાતો ઉપહાસ કરનારને, એમને કુન્સદ મળે, વિચારવા મારી સલાક છે કે ચરખાએ કેટલા પોલીસનું કામ કર્યું છે અને આજે દરી રહ્યા છે એ જરા વિચારો તો જ પૂ. બાપુના સામાજિક ન્યાયના માર્ગની કદર થશે

૨૩. એવી જ રીતે Incentives (વળતરના આકર્ષણ)ની દૃષ્ટિએ વિચાર કરનારને મારી વિનંતિ છે કે તમારી મર્યાદા વિચારી જુઓ. હું માનું છું કે દુનિયાભરના નાણાં પ્રાપ્તવામાં આવે તોપણ જ્યાંસુધી અન્યાયથી જકડાયેલા સમાજના બંધન છૂટા ન કરે-

વામાં આવે અને એ આત્મવિશ્વાસથી, ઉત્સાહથી અને સ્વયંપુરુષાર્થથી ભારતના વિકાસના કામ ન ઉઠાવી લે ત્યાંસુધી ભારતના સામાજિક ન્યાય-અન્યાયની સમસ્યા હલ થઈ શકશે નહિ. આ પૂ. આપુનો માર્ગ હતો. અન્યાયના બંધનો દૂર કરે ત્રેમથી આત્મવિશ્વાસ લોકોમાં જગવો. ભૂત કરે તોપણ પ્રેતસાહન આપી લોકોમાં ઉત્સાહ ભરો, અને સ્વયંપુરુષાર્થને રસ્તે ચડાવો, તો જ ભૌતિક સહાયતા જગી નીકળશે એકડો હશે તો મીંગતી કિંમત થશે.

૨૪. અબળ, રૂઢિચુસ્ત, પરાધીન માતા આજે પોતાના જ પ્રશ્નોમાં એટલી ગૂંચવાઈ ગઈ છે કે એને બહાર જોવાની, અરે બાળકોને તૈયાર કરવાની-બચાવવાની કુરસદે ક્યાં છે ! નહોતી રૂસમાં આ સમસ્યા, નથી ચીનમાં આ સમસ્યા. આ સમુદાય આદર અને મૈત્રી લાગે છે. બાળકને પૂરું ખાવાનું મળતું નથી, એનું ભૂખું અને તરસું મગજ ખીખના મગજ ખાવા ઉપરાંત શું કરી શકે ? એ પૌષ્ટિક અને પૂરતો ખોરાક માગે છે અને વહાલ માગે છે. મજૂર વર્ગ આ સમાજમાં ગૌરવભયું સ્થાન માંગે છે અને પેટપૂરતી રોજી માગે છે. આદિવાસી આત્મીયતાનો ભૂખ્યો છે : એ જમીન-રોજીનાં સાધન માગે છે. સ્ત્રીઓ પ્રત્યેનો Superiority complex (ગુરુતા ગ્રંથિ)—બાળકો પ્રત્યેનો ઉપેક્ષાવૃત્તિ શ્રમજીવનની સામે આપણા શરાદતના ખ્યાલો—હરિજન પ્રત્યેની આપણી ઉપકારક વૃત્તિ—આન્ધિયાઓ પ્રત્યેની આપણી ઉદાસીનતા સામાજિક ન્યાયનાં પોષક નથી. પૂ. આપુ આ બધું કરવા મથી રહ્યા હતા. માત્ર રૂપિયા પૈસાથી આ થતું નથી; એને માટે ‘સંવેદન’ની કિંમતી જડીબુટ્ટીની જરૂર છે.

૨૫. પરંતુ હું જૂલતો ન હોઉં તો આ બધું આપણી શરતેજ કરવા માગીએ છીએ. કુદરત અસંત માયાળુ છે, એની ધીરજ પણ અપાર છે, પણ એની માયા અન્યાય. પોષક નથી. એની ધીરજ અનાદિકાળ સુધી ટકતી નથી. કુદરતનાં ચક્ષુ ધીમે ધીમે પીસે છે, પણ જે કંઈ પીસે છે તે બારીકમાં બારીક જ હોય છે. પસંદગી આપણી પાસે છે. ધીમે ધીમે સ્પષ્ટ થતું જાય છે કે સ્વરાજ્યની ભૂખનો પાછળ ઉદ્દેશની આપણી ભૂમિકા પાશ્વર્ય હતી. એ ધોરણે પણ આપણાં પગલાં ઘણાં મંદ અને અપૂરતાં છે.

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પશ્ચિમનો પ્રણાલી અને આપણું ‘સંવિધાન,’ અને પૂ. ગાંધીજીનો માર્ગ

૨૬. પશ્ચિમના દેશોમાં સામાજિક ન્યાય માટે તંત્ર કેટલેક અંશે જવાબદારી ઉઠાવે છે. આપણા ‘સંવિધાન’માં પણ આ વિશે પૂરતી જોગવાઈ છે. એમાં આ ત્રિપ્ત પરત્વે બે પ્રકરણો છે : એક અબાધિત અધિકારોનું, જેનો અમલ ટ્રાઈ સુધી પચ્ચ જઈને કોર્ટ પચ્ચ પ્રબળ કરાવી શકે છે; અને બીજું છે Directive principles—રાજ્યના માર્ગદર્શક સિદ્ધાંતોનું, જેનો અમલ ટ્રાઈ મારક્ત થઈ શકતો નથી, પણ જેમાં સ્પષ્ટ કરવામાં આવ્યું છે કે રાજ્યઅમલ કરનાર વર્ગ આ સિદ્ધાંતોને અનુમરી કાપવાઓ ઘડશે અને વ્યવસ્થા કરશે. ત્યાંસુધી રાજ્યતંત્રને લાગે વળગે છે ત્યાંસુધી બંને સમાન રીતે અમલદારક છે. આપણા ‘સંવિધાન’નાં આ વીસ પાનાંમાં જે લખાયેલું છે તે સામાજિક ન્યાયની સ્થાપનાને માટે

સંપૂર્ણ રીતે પૂરતું છે એમ નહિ કહી શકું, પણ એ ખરેખર મહત્વનું છે. આપણી ત્રિધાનસભા અને પાર્લામેન્ટ કાયદા કરે છે ત્યારે હમેશાં સંપૂર્ણપણે એનો અમલ કરે છે એમ નહિ કહી શકાય, પણ એનો એ દિશામાં પ્રયાસ પૂરેપૂરો છે. સરકારો અને ન્યાયતંત્ર એનો ભંગ થતો અટકાવવાને માટે પુષ્કળ મથે છે.

૨૭. પરંતુ એનો પૂરેપૂરો લાભ સમાજના નિઃશ્ચયકર્તા થરને મળે એને માટે ત્રણ વસ્તુની જાણ છે. એક તો જાણકારીનો અભાવ, બીજું આર્થિક સાધનનો અભાવ, અને ત્રીજું પહોંચનો અભાવ. ફરી પરિવર્તનના કાળમાં જે થર વચ્ચેનાં અંતર આપણી સામે આવે છે. જેની પાસે બુદ્ધિ છે, જેની પાસે સાધન છે, જેની પાસે વગવડીનો છે, જેની પાસે ધન છે, જેની પાસે સંગઠન છે, તેને માટે આ બધાંની પૂરતી ગુંજાયશ છે. જેની પાસે એ નથી તેની મુશ્કેલી દૂર થતી નથી. પશ્ચિમ અને હિંદુસ્તાનની સ્થિતિમાં એક ફરક છે : પશ્ચિમમાં આ વસ્તુઓને લાવવાને માટે સો વર્ષ લાગ્યાં, દરમ્યાન સંઘર્ષો થયા, અને દરમ્યાન કેળવણી પણ વધી, અને દરમ્યાન લોકોના સાધનો પણ વધ્યાં. આપણે પણ સો વર્ષનો સમય આપી શકીએ તો આ શક્ય બને; પણ એટલો સમય છે ?

૨૮. બીજું દૃષ્ટાંત લઈએ. ‘સંવિધાન’માં એક કલમ છે : ‘ભારતના તમામ નાગરિકોને રાજ્યના નોકરીઓમાં સમાન હક રહેશે.’ વાસ્તવિક પરિસ્થિતિ શી છે ? જેના ગામની સૌ માઈલના વિસ્તાર સુધી કોનેજ ન હતી કે જેની પાસે પોતાના બાળકોને હાઈસ્કૂલ સુધી પણ મોકલવાના પૈસા ન હતા, તેને માટે આ કલમ તો અમલમાં વીસ વર્ષે આવે. અને એ પણ કેટલાને માટે ? એમને મન આ કલમથી શો સંતોષ ? ત્રીજું એક કલમ છે : ‘અસ્પૃશ્યતા સંવિધાનથી નાબૂદ કરવામાં આવે છે અને એ જાતનો વર્તીવ પ્રતિબંધિત છે.’ આજે પણ સેંકડો ગામડાંઓમાં અસ્પૃશ્યતાનો વર્તીવ પ્રવર્તે છે. ચોથી કલમ છે : “માણસનો વેપાર, વેક, બેગાર અને ગુલામીની પ્રથા પ્રતિબંધિત છે.” માણસના વેપાર સંબંધમાં તો પુખ્તબહેન કહી શકે. ગુલામીની પ્રથા સંબંધમાં હજુ અવશેષો અહીંતહીં જોવામાં આવે છે. આમાં ‘સંવિધાન’નો દોષ નથી, શાસનનો પણ દોષ નથી, પણ એ જે પ્રકારની જાણકારી સાધન અને પહોંચ માંગે છે તે ન પ્રાપ્ત થાય, જેને પ્રાપ્ત થયાં નથી તેને માટે દુર્લભ છે. ‘સંવિધાન’ પ્રત્યે આપણી ફરજ માગી લે છે કે એ અડચણો દૂર કરીએ અને ‘સંવિધાન’ના અધિકારો લોકોને પ્રાપ્ત થાય એને માટે મહેનત કરીએ. ફરી પાછા પૂ. બાપુ પાસે આપણે પહોંચીએ છીએ.

૨૯. એવી જ રીતે ‘સંવિધાન’ના માર્ગદર્શક સિદ્ધાંતો લઈએ. આ પ્રકરણની શરૂઆતમાં લખ્યું છે કે આ પ્રકરણની કલમોનો અમલ કોર્ટ નહિ કરી શકે, પણ રાજ્ય જે કંઈ કાનૂન કરે, જે કંઈ હુકમ કરે તે એને અનુસરીને કરશે. ‘સંવિધાન’ના ધડબંધોમાં માનીને ચાલ્યા છે કે બધા મંત્રીઓ, પ્રધાનો અને સચિવો આ હમેશા યાદ રાખશે. પણ બધાને માટે એમ નહિ કહી શકીએ. કારણ ? આપણે ત્યાં સામાજિક ન્યાયના પ્રશ્નની સર્વાંગીણ દૃષ્ટિએ કશી જાણણી ચર્ચા થઈ નથી, નથી થઈ એની છણાવટ.

૩૦. આ પ્રકરણની ચોથી કલમ કહે છે કે ભારતનાં તમામ નાગરિકો, સ્ત્રી હોય કે

પુરુષ, એમને સરખી રીતે એમના જીવન-નિર્વાહનાં વાજગી સાધનાનો અધિકાર છે. આ વિશે આપણે ઉપર જોઈ ગયા. આગળ ચાલી આ કલમ કહે છે કે સમાજનાં તમામ સંધર્મો સાર્વત્રિક હિતની દૃષ્ટિએ વહેંચાવાં જોઈએ. અર્થશ્યતા એવી ન હોવી જોઈએ કે ધન-સંપત્તિનું કેન્દ્રિય-કરણ થાય, — પુરુષો અને સ્ત્રીઓને સમાન મહેનતાણું મળવું જોઈએ. ગરીબોને કારણે કોઈ પણ પ્રજાજનને પોતાની શરીરશક્તિને હિસાબે અગોચ્ર કામ કરવાની જરૂરિયાત ઊભી થવી ન જોઈએ. બીજી એક કલમમાં રોજનો અધિકાર તથા ફરજિયાત એકાદીને સમયે રાજ્યની સહાયતાનો અધિકાર વગેરે ધણું ધણું સ્વીકારવામાં આવ્યું છે; પણ દેશ પાસે પણ એટલાં સાધન ન થાય ત્યાંમુધી શું થઈ શકે? અને ફરી પાછા ત્યાં ને ત્યાં આવીએ છીએ કે દેશ પાસે એવાં સાધનો આવે એનો સરળ માર્ગ કયો. દેશ એ ત્યારે પ્રાપ્ત કરી શકે કે જ્યારે દેશવાસીઓનો સારો સમૂહ એમાં જોડાય. અને એની શરત? કાં તો પૂ. બાપુએ કહી તે, કાં તો બીજા બતાવે છે તે। પસંદગી આપણી છે.

૩૧. સામાજિક ન્યાયનો સવાલ માત્ર રાજ્યકારણનો સવાલ નથી, આમાં આપણા દેશના સ્થિતિ, સંજોગો, ભૂતકાળના અનુભવો, આપણી પ્રજાસિદ્ધાંતો, આપણા મતબ્દો અને આપણી બધી અભિજ્ઞાપાઓનો સવાલ છે. પોતાની સ્થિરતાને માટે, પોતાના વિદ્યાસને માટે, અને અનેક ભયો આમાથી જન્મે છે તેમાંથી પોતાને ઉગારી લેવાને માટે સામાજિક ન્યાયને સમાજ અનિવાર્ય નહિ સમજે ત્યાંમુધી આ પ્રશ્ન પતવાનો નથી. એ વસ્તુતઃ એટલો રાજકીય નથી, પણ રાજકીય બની જવાનો છે. એમાં ઉગ્રતા આણતો અટકાવી શકાય એમ છે, પણ ઉગ્ર બની જવાનો છે.

૩૨. સમાજમાં ઉદ્યોગીકરણ થઈ રહ્યું છે. ભારતવર્ષને એની જરૂરત પણ છે, પણ ભારતવર્ષ એ જ ભૂતે છે કે જગત જેમ જેમ ઉદ્યોગીકરણમાં પ્રગતિ કરી રહ્યું છે તેમ તેમ સામાજિક ન્યાયની બાબતમાં પણ પ્રગતિ કરી રહ્યું છે. આજે કોઈ પણ દેશમાં જ્યાં ઉદ્યોગીકરણ અમુક હદે પણ પહોંચ્યું છે, પછી એ અમેરિકા હોય કે યુગોસ્લાવિયા હોય, રશિયા હોય કે કેરો કે કયૂઆ હોય, ત્યાં અમુક વસ્તુ તો સ્વીકારવામાં આવી છે, એટલું જ નહિ, પણ એનો અમલ થઈ રહ્યો છે. ખાવાનું તો, અમુક વસ્તુઓ તો, સસ્તામાં મળશે કે ને કોઈ પણ મેળવી શકે તેને બૂખ્યા રહેવાની જરૂર નહિ રહે. નિશાળ, મકાન, દવાખાનાં, પીવાનું પાણી અને કામ આ બધી વસ્તુઓ સંબંધમાં પ્રજાને નિશ્ચિંત કરવામાં આવી છે.

૩૩. આપણા દેશ પાસે એટલાં સાધન નથી, આપણી વસ્તીની સંખ્યા વધારે છે, આપણે લોકશાહીના ધોરણે ફરકારો લાવવા માગીએ છીએ, પણ આપણે બૂલીએ નહિ કે ફેટલીયે વિધમનાઓનાં ઝણુ આપણે ચૂકવવાનાં બાકી છે. ફેટલીયે વિધમનાઓ એવી છે કે જેને માટે નાણાંની જરૂર છે, પણ ફેટલીયે એવી છે કે જેમ આપણું વહેંચુ બદલવાની જરૂર છે, મૂલ્યાંકન બદલવાની જરૂર છે. આપણે ત્યાં પૈસાનો સવાલ આવે છે ત્યાં કંઈક પણ જગત આપી શકીએ છીએ, જો કે એ સતોપત્તનક તો દરેકમાં નથી હોતો. પણ ત્યારે પૈસાનું ખર્ચ નથી તે સવાલની સામે નિરુત્તર બનીએ છીએ.

૩૪. કારણ શું ? ભારતીય સમાજ સામાજિક દૃષ્ટિએ વિચારતો નથી, અથવા જો વિચારે છે તો એ દૃષ્ટિએ કે જે દૃષ્ટિ હજાર વર્ષ પહેલાના સમાજને માટે અનુકૂળ હતી, જ્યારે હિન્દુસ્તાનમાં આટલી વસ્તી ન હતી, હિન્દુસ્તાન ગુલામીમાંથી પસાર થયું ન હતું, હિન્દુસ્તાન અભૂતપૂર્વ શોષણમાંથી પસાર થયું ન હતું. ત્યારે આપણે શું કરીશું ? સામાજિક ન્યાયના સિદ્ધાંતો જ્યાંસુધી પ્રજા પોતાના જીવનનો ભાગ ન ખનાવે, અને પ્રજાના એવા માત્ર તમામ થર, ત્યાંસુધી પ્રજા ઉપર જોખમ છે એની સદૈવ યાદ આપ્યા કરીશું. જ્યાંસુધી પ્રજાના તમામ થરનાં માણસો આ કામ ઉપાડી નહિ લે ત્યાંસુધી સમાજ ઉપરનો ભય ઊભો જ છે. અને છેવટે તમામ વસ્તુઓને અવધિ હોય છે એ ભૂમીશું નહિ.



બીજો તા. ૨૦-૧૦-૧૯૬૨ને શનિવારને દિવસે બપોરે ૩ થી સમાજસાસ્ત્ર-વિભાગનું કાર્ય શરૂ થયું હતું. આ વિભાગના અધ્યક્ષ પ્રો. ડૉ. કે. એમ. કાપડિયાએ આરંભનું વિષયને શાસ્ત્રીય પરિચય આપતું મૌખિક વ્યાખ્યાન કર્યા પછી ખાસ ખંડમાં આ વિષયના આવેશો નિબંધોનું વાચન અને એના ઉપર ચર્ચાઓ થઈ હતી. આ વિષયના આઠ નિબંધ રજૂ થયા હતા તેમાંના સાત અહીં પ્રસિદ્ધ કરવામાં આવ્યા છે.

વાગડ પ્રદેશના જનજીવન (સાર)

પ્રો. લાલશંકર ટું. જોશી, મોઢાસા

હમારે દેશ મેં ત્રીન વાગડ પ્રદેશ હૈં — (૧) કચ્છ-ગુજરાત કી સરહદાં કૈ વીચ કા, (૨) મેવાડ માલવા-ગુજરાત કી સરહદોં કૈ વીચ કા ઓર (૩) રાજસ્થાન મેં 'નરમદા (નરહટ) આદિ પિલાની મેં હાંસિહિંસાર તક કા પ્રદેશ'. ઇનમેં હમારા વાગડ દુસરા હૈ — જિમમેં દક્ષિણ પૂર્વી રાજસ્થાન કૈ જૂંગરપુર ઓર બૉસવાડા કૈ જિલ્લોં કા સમાવેશ હૈ ઓર જો ૨૩° ૧૫' સે ૨૪° ૧' ઉત્તર અક્ષાંશ એવમ ૭૩° ૧૫' સે ૭૪° ૨૪' પૂર્વ રેશાન્તર કૈ વીચ ફેલા હુવા હૈ. ઇસકા ક્ષેત્રફલ કરીબ ૪,૦૦૦ ચર્ગમીલ તથા આબાદી લગભગ ૧૨ લાખ કી હૈ. ઇસકી મૂલ પ્રજા દ્રાવિડ પરિવાર કી આદિવાસી મીલ જાતિ હૈ. ઇસ પ્રદેશ કી મુખ્ય બોલી વાગડી હૈ. મીલી-પલવાડી તથા કટારી બોલિયોં મી સ્થાનવિશેષ પર બોલી જાતી હૈં.

અરાવલિ કી પર્વતમાલાઓ કૈ છોટ સે નિર્મિત ઇસ પ્રદેશ કી ભૂમિ વનોં સે આચ્છાદિત, ઊંચી-નીચી પહાડિયોંવાલી પઠાર-ભૂમિ (forested upland) હૈ. મહીસાગર નદી ઇમ પ્રદેશ કૈ મધ્ય મેં સે બહતી હુઈં ખમાત કી ઝાડી મેં જાતી હૈ.

મૂલ પ્રજા પાલો (વનાચ્છાદિત પર્વતોં મેં બિચરી હુઈં વસ્તી) મેં રહતી હૈ. કાલાંતર મેં મેવાડ, માલવા તથા ગુજરાત સે અન્ય પ્રજાઓ કૈ આગમન સે અષ યહોં પવરગી પ્રજા હૈ.

પ્રારંભ મેં 'મીલ માંડલિક શાસન' કૈ પશ્ચાત્ યહોં ક્ષત્રપોં, શર્કોં, ગુપ્તોં, હર્ષોં, વલ્લિહારોં, માલવ પરમારોં, મેવાડી ગુહિલિયોં, ગુજરાતી સોલંકિયોં આદિ કા રાજ્ય રહા હૈ. લીધકાલ તક યહોં રાજપૂત શાસન કૈ કારણ એકતન્ત્રી નિરંકુશ તાનાશાહી હુકુમત તથા જાગીરદારી કી અધીનતા મેં યહોં વીં જનતા શોપિત, નિરક્ષર તથા દુઃખી જીવન ગુજારતી રહી હૈ. સુરા, સુન્દરી તથા શિકાર મેં રત જામકોં કી અવહેલના કૈ કારણ યહ પ્રદેશ 'પિછડા' રહા હૈ.

સ્વતંત્રતાપ્રાપ્તિ તક યહોં વેટવેગર તથા સાગડી પ્રથા (એક તરફ કી ગુલામી કી પ્રથા) કા બોલચાલ રહા હૈ. નથરદારશાહી તથા સરકારી કારિન્દોં કૈ શોષણ કૈ કારણ પ્રજા મરીમી કૈ વ્રાત મેં સડતી રહી ઓર શિક્ષા કૈ અભાવ મેં અંધશ્રદ્ધા તથા અધમક્ષિ કા શિકાર રહી. ધાર્મિક રૂઢિચોં તથા સામાજિક કુરીતિયોં કૈ કારણ યહ પ્રદેશ પ્રહ્યાત હૈ. યહોં બાલવિવાહ, અનમેલ વિવાહ, માટા-દાસ, કન્યાવિક્રય, દહેજપ્રથા, મૃત્યુભોજ આદિ કૈ અલાવા સુબાદત કા પ્રચાર મી વ્યાપક હૈ. પુનર્વિવાહ મી નિમ્ન સ્તર કી પ્રજાઓં મેં હી ચલતા હૈ. અધિક પત્ની પ્રથા મી વ્યાપક હૈ. નારી કી અવસ્થા વહીં હી દયનીય-ગુલામ જેસી હોતી હૈ. એક હી જાતિ કૈ અનેક કિંદા મ આજ મી મેટી-ચલદાર હોવા હૈ, પરંતુ વેટીવ્યવહાર નહીં. એક હી જાતિ અનેક નોંલોં મેં વિભક્ત હોતી હૈ. પ્રાકૃત મેં 'વનદ પ્રાકૃત' ઓર તેરફ બંગાળી' વાંચી યાત સોલંક આવા મહી હૈ. વાગડ કૈ પ્રાકૃત 'વમેકાવટ' ના હોં મૌખિક ચલાવે હૈ. યહોં કૈ મહાજન-ચરિયે 'વ્યાજવટા' કા હી અન્ધા મુખ્ય રૂપ મેં કમ્પ હૈ. ૩૬ રજા

चक्रवर्ती व्याज तथा आड़त द्वारा इनका शोषण अमानवीय स्थिति का है। १२ टका व्याज की तो सरकार भी स्वीकृति देती है। पटेलो का जीवन कृषिकर्म पर ही निर्भर रहता है। अन्य प्रजाएँ अपने जातिवार पेशों के अलावा मजदूरी आदि करके पेट पालते हैं। चोरियाँ और डाकेजनी भी अधिक मात्रा में होती है। जन्तर-मन्तर तथा तान्त्रिक विद्या का प्रचार भी अधिक है। 'वीर' ठालना, 'मूँठ' मारना, भूत, प्रेत, चूड़ैल, ढाकणी, वंतरी का भय रहता है।

उच्च वर्ग को छोड़ कर माँस-मदिरा, चोरी-छिनाली, लूट-हत्या भी होती है। यहाँ की प्रजा अधिकतर अनगढ़ तथा असंस्कारी 'बागड़िया' कही जाती है। कहावते हैं-

(१) "खड़ खँकड़ ने खेजड़ गणा कासड़ियाळो वेस।

नपट नारि पियु सजामण ई तो वंटघो वागड़ देस ॥"

(२) "के गयाता? वागोड़! सुँ खादु? राबोड़! सुँ लावा? (चौरि) बाँगोड़!"

(३) 'वागड़े पंच रत्नानि पत्राणि च शिलोदकम्। चतुर्थं मधुपुष्पं च पचमं वस्त्रलोचनम् ॥"

यहाँ मध्ययुगीन सामंतवारी संस्कृति का ही दर्शन होता है।

यहाँ की प्रजा में आचार-विचार में अन्तर पाया जाता है। साहित्य तथा कला कारीगरी में भी यहाँ विशेष उल्लेखनीय बहुत कम है। परन्तु यहाँ का लोकसाहित्य प्रचुर मात्रा में पाया जाता है। (देखिये मेरी 'थिसिस' के परिशिष्ट)। देवसोमनाथ, तलवाडा, अरथूणा तथा गलियाकोट के मंदिरों में प्राचीन शिल्प-विधान के अवशेष आज भी मौजूद हैं। ओबरी-आतरी गावों के बीच 'विराटनगर' के खंडहर भी मिलते हैं (सशोधन या खोदकार्य नहीं हुआ है)। योगीराज भावजी नामक एक संत संवत् १७८४-१८५४ हुए जिन्होंने शूद्रों की 'शुद्धि' तथा समाजसुधार का कार्य किया। उनके लिखे चार हस्तलिखित ('मिश्र' भाषा में) ग्रंथ भी मिलते हैं। गोविन्द गुरु ने आदिवासियों को 'भगत' बनाने का कार्य भी किया। परन्तु व्यवस्थित रूप से समाज, साहित्य, कला तथा संस्कृति के क्षेत्र में कार्य नगण्य रहा। अतिथिसत्कार तथा दुःख सुख में एक दूसरे की मदद की भावना यहाँ की विशिष्टता है। स्वश्रम पर जीवित यहाँ की जनता मेहनतकश तथा मजबूत शरीर की होती है। व्रत, उत्सव, मेले तथा त्यौहार भी मनाये जाते हैं। होली-दिवाली मुख्य त्यौहार तथा बणेश्वर का माघ शुक्ल पूर्णिमा का मुख्य मेला उल्लेखनीय हैं। प्रजा धर्मभीरु, सरल, सादी तथा भोली है। उदयपुर, तलोद, दाहोद और रतलाम की बीच सैकड़ों मील में इस प्रदेश में रेलवे लाईन नहीं है, अब उदयपुर-हंगरपुर-हिम्मतनगर रेलवे हो रही है। उद्योग-धन्धे या कला-हुन्नर के अभाव में गरीबी का यहाँ बोलबाला है। ९५ % जनता ऋणग्रस्त है।

जन्म से लेकर मृत्यु तक की तमाम सामाजिक तथा धार्मिक रूढ़ियों का पालन किया जाता है। 'सीमंत' का मुहूर्त, प्रथम सन्तान की प्रथम होली पर 'हूढ', यज्ञोपवीत, शादी तथा मृत्यु तथा उसके उपरांत क्रियाकर्मों की विधियों में फर्जियात फिजुल खर्ची करनी पड़ती है। मृत्यु पर मर्सिया (जिसे 'हरिया' कहते हैं) गाने का रिवाज है।

आज़ादी के बाद अब नवयुग की चेतना का प्रकाश फैला रहा है। समाजसुधार तथा अन्य बातों पर सुधारवादी दृष्टिकोण दीख रहा है। 'वागड़दूत' तथा 'वाग्वर' (४ अंक के बाद बन्द है) आदि साप्ताहिक एवं त्रिमासिक पत्र भी निकल रहे हैं। खनिज संपत्ति से भरपूर इस प्रदेश के जनजीवन की समृद्धि की आशा है।

લોકગીતોની સમૃદ્ધિ

શ્રી. જોરાવરાસંહ ડી. જાદવ, અમદાવાદ

લોકસાહિત્યનાં અભ્યાસકોની દષ્ટિ ત્રણ પ્રકારની રહી છે: પ્રથમ તો લોકસંસ્કૃતિનો પરિચય કરાવવાની, બીજી લોકસાહિત્યની વ્યાખ્યા કરવાની અને ત્રીજી લોકસાહિત્યનું વિશ્લેષણ કરીને એના આધારે ધાતહાસ, સમાજશાસ્ત્ર અને નૃવંશશાસ્ત્ર સંબંધી માહિતી મેળવવાની. ૨. સમગ્ર લોકસાહિત્યને આપણે મુખ્યત્વે પાંચ વિભાગમાં વહેચી શકીએ:

- (૧) લોકગીતો : folk-lyric
- (૨) લોકગાથાઓ : folk-ballads
- (૩) લોકકથાઓ : folk-tales
- (૪) લોકનાટ્ય : dramas
- (૫) પ્રકીર્ણ સાહિત્ય : miscellaneous literature

લોકજીવનમાં લોકકથાઓના પ્રમાણમાં લોકગીતોની વ્યાપકતા વધુ જણાય છે. આપણે અહીં લોકગીતો પર જ દષ્ટિપાત કરીશું. લોકકથાને સંસારના સમસ્ત કથાસાહિત્યના પિતા તરીકે મૂકીએ તો લોકગીતને સકલ કાવ્યની માતા તરીકે અવશ્ય મૂકી શકાય.

લોકગીતોની ઉપાનો ઉદય ક્યારે થયો હશે એ સંશોધનનો વિષય છે. સુકીભટ્ટ વિરહી ધરતી પર મેહુલિયો આવી પહોંચે અને વૃક્ષોની વનરાજિમાંથી મસ્ત મયૂરો ગરેફી ઊઠે, રંગ-જેરંગી ફૂલો ખીલવનાર વસંતઋતુનું આગમન થાય અને કુંજવટામાંથી કાયલ મીઠા ટુકડા કરી ઊઠે તેમ તહેવારો અને ઉત્સવો આવતા લોકહૈયા આનંદથી નાચી ઊઠે છે, જીવંતરનાં રાગદંપ અને દુઃખ ભૂલી જઈને જીવનનો થાક ઉતારી નાખનાર લોકગીતોની રમઝટ ગોલાવે છે.

લોકગીતો પૂનમની અમૃતનીતરતી રાત્રિએ ગ્રામનારીઓએ ગાયાં. માળે ચડીને ખેતરમાંથી પક્ષીઓ ઉડાડતા અને પશુઓને તગેડી મૂકતા ટોચાઓએ, ચાકડો ફેરવતા કુંભારે, ઘમ્મર ઘંટી ફેરવતી અને વસોણા વલોવતી નારીઓએ, ધઉં વાદના વૃક્ષના શીતળ છાંયે પારણું બાંધી બાળકને કુદરતના ખોળે ઝુલાવી મીઠી નીંદરમાં પોદાડતી મજૂરણુ માતાએ ગાયા, પતિના આદેશ સાથે ભાત લઈને ખેતર જતી ખેડૂત નારીએ તથા મરતીમાં આવીને પ્રિયતમને સામા પ્રત્યુત્તર વાળતી પ્રિયતમાએ તથા ભાટ, ચારણુ, મીર અને રાવણુ હથ્થાવાળા નાથ બાવાઓએ ગામડે ગામડે ફરીને ગાયાં.

લોકગીતોએ માનવહૃદયના આનંદોની છોળો ઉડાડી છે તો કારુણ્યનું જંતર પણ વગાડ્યું છે. લોકહૈયાની ભિમ્બિઓને રંગ અને રેખા આપીને પૂર્ણપણે ખીલવાને સંગીતરૂપે બહેલાવી છે. લોકગીતોને શબ્દદેહ અર્પાને મનોરમ અલંકારોથી આભૂષિત કરનાર, સુખના સાગર લહેરાવનાર અને દુઃખના કુંગરા ખડા કરી દેનાર એવા અનેક અનન્ય લોકકવિઓને પ્રેરણાનું પિયૂષ પાણું છે.

લોકગીતમાં લોકજીવનનું ધબકતું હૈયું જેવા મળે છે. કળાયેલ ગોર જેવા પ્રિયતમ અને રણકતી દેવ્ય જેવી પ્રિયતમાની મીઠી મરતી, વર્ષાઋતુમાં પળે પળે પિયુ પિયુ ઝંખતી વિરદિબ્બોની

વ્યથા, ભાર્ગવહેનના નિર્મળ સ્નેહનું આલેખન, દિયરભાભીની ધીંગામરતી, વાદવાદીલી દેરાણી જેઠાણી, ખારમા ચદ્રમાની અસરવાળી સાસુ અને વહુના પ્રસંગો કલામય રીતે આલેખાયા છે.

નીચેના લોકગીતમાં લોકકવિની કદ્દપના પ્રસન્ન પુષ્પની માફક ખીલી ઊઠે છે. રામસીતાના લગ્નની કેવી મધુર કદ્દપના છે !

વનની ચોરી ચીતરી રામૈયા રામ.

ધરતીના કીધા બાળેઠ રે „ „

આભનો નાખ્યો માંડવો „ „

વીજળીની કીધી વરમાળ રે „ „

નવ લાખ તારા જોઈ રહ્યા „ „

પરણે પરણે સીતાને શ્રીરામ રે „ „

રામ અને સીતાના પ્રણયકલહના આલેખનમાં પણ નિર્મળ કાવ્યત્વ જ નીતરે છે :

લવીંગ કેરી લાકડીએ રામે સીતાને માર્યાં જો.

ફૂલ કેરે દહુલિયે સીતાએ વેર વાળ્યાં જો.

શાશ્વત સાહચર્યની ભાવના કેવી કાવ્યમય રીતે રજૂ થઈ છે !

રામ તમારે બોલડિયે હું આકાશ-વીજળી થઇશ જો.

તમે જો થાશો આકાશ-વીજળી, હું મેહલિયો થઇશ જો.

નવી નવી પરણીને સાસરે આવેલી નવ વધૂ ખૂંચ સુખી છે. પોતાના સુખનું સ્વપ્ન એ પોતાની સરખી સાહેલીને કહે છે. એની એક એક ઉપમા કેવી સુદર છે !

આજ રે સ્વપ્નામાં મેં તો ડોલતો કુંગર દીઠો જો.

ખળખળતી નદિયું રે સાહેલી મારા સ્વપ્નામાં રે.

ડોલતો કુંગર ઈ અમારો સસરો જો.

ખળખળતી નદિયે રે સાસુજી મારા નહાતાં તો રે.

આજ રે સ્વપ્નામાં મેં તો ગુલાબી ગોટો દીઠો જો.

ફૂલડિયાની ફોયું સાહેલી મારા સ્વપ્નામાં રે.

ગુલાબી ગોટો ઈ અમારો પરણ્યો જો.

ફૂલડિયાની ફેરમ સાહેલી મારી ચૂદડીમાં રે.

ગુજરાતના લોકગીતમાં ભાતભાતની વિશિષ્ટતા જોવા મળે છે. કારતકથી માંડીને માગશર, પોપ, મહા મહિનાના માયરાં, કાગણીની હોળી, ચૈત્રમાં ચાળા કરતું ચિત્ત, વૈશાખમાં ફાલતી વનપતિ, આપાદનું ધનધોર આકાશ, શ્રાવણ માસનાં સરવરિયાં ને ‘આસો માસો શરદ પૂનમની રાત’ આમ ઋતુવર્ણનો લોકગીતોમાં ઠેર ઠેર વેરાયેલા પડ્યાં છે. રગબેરગી ઋતુઓની સમાજી વસંત અને અમૃત જેવા છાટણાથી સૂકી ધરતીને લીલીછમ બનાવી દેનાર વર્ષાને તો લોકકવિઓ બ્રહ્મા જ નથી. વર્ષાઋતુમાં પળે પળે પિયુને યાદ કરતી વિરહિણીના હૈયાનાં અકથ્ય અરમાનો લોકગીતો સંઘરીને બેઠા છે. એક એક પંક્તિ કેવા કેવા ભાવ રજૂ કરે છે !

કાગણુ હોળી ફાલતી કાગ રમે સૌ કોઈ.

એક હોળી મારે આંગણે, ખીજ હૈયે હોળી હોય. (૧)

ધોર અંધારી રાતલડી, ઝરમર વરસે મેહ.
 આંખેથી અશ્રુ ઢળે, જેને સ્વામી ગયો ત્યજી નેહ રે (૨)
 ચંપા ચમેલી મોગરા, ફરી નવપદ્મવ થાય.
 વિરહિણી જાત જવાસિયો, એ તો છાંયે સુકાઈ જાય. (૩)

સૌરાષ્ટ્રના લોકહૈયામાં મઢોઈ ગયેલી ઢાલા-મારુની નાયિકાએ પણ લોકગીતોમાં આગવું સ્થાન લીધું છે. આ ગીત વિરહને ઉદ્દીપન બનાવી શૃંગાર રસ રેલાવે છે :

પંખી એક સંદેશડો, ઢાલા લગ લે જવ.
 જોખન ચંપો મોરિયો, કળી ચૂટનકું આવ.
 પંખી એક સંદેસડો, ઢાલાને કહી આવ.
 જોખન હસ્તી જાગિયો, અંકુશ લઈ ઘેર આવ.

એવી જ ઉત્કટતા નાગને જોવા ફરતી પ્રેમી જોગણુ નાગમદેના મુખમાં લોકકવિએ મૂકી છે :

મનની કીધી મોરલી, તનના કીધા ત્રાગ,
 જોવા જનમની જોગણી બારો નીકળ્ય નાગ.
 વગાડું છત્રીસ રાગ, કાંધે જાંતરડું કરી,
 નીકળ્ય બારો નાગ વેશ જોવા વાદળુ તણો.
 આંખાથી ઊઠેલ બાવળ મન બેસે નહીં.
 ચંદનથી ચૂકેલ વન કાઈ વિસામો નહીં.
 કુંજલડી રે સંદેશો અમારો જઈ વાલમને કહેજો છ રે,
 પ્રીતિ-કાંઠાનાં પંખીડાં, પ્રીતમ વિણુ સૂનાં છ રે.

લોકગીતોના રચયિતા ભારતનાં વિભિન્ન ગામડાંઓમાં વસે છે. એમણે કીર્તિ સંપાદન કરવાની વૃત્તિ કદી રાખી જ નથી. ઊર્મિ જાગે તો ગીતસ્વરૂપે લોકગીતોની સરવણીમાં વહેતું મૂકી દે છે. ગુજરાતી લોકગીતનો રચયિતા મોટે ભાગે સ્ત્રીવર્ગ જ છે. આપણા સ્ત્રીસમાજમાં ફેટલીયે અજ્ઞાન કવયિત્રીઓ પોતાની આગવી શક્તિ લાઇને બેઠી છે, જેને આપણે કદી ઓળખી શક્યા નથી. એઓ સમાજજીવન અને લોકમાનસનું દર્શન લોકગીતમાં મુંદર રીતે કરાવે છે; જેમકે-

વીંછિયો પહેરી પાણીડારે ગ્યાંતાં અલખેલીના રસિયા.
 વીંછિયો જળમાં ડૂબ્યો રે " "
 હનુમાનને મલિદો માન્યો રે " "
 શિક્ષાતરને ચોખ્ખા માન્યા રે " "
 ખોડિયારને લાપસી માની રે " "

પછી તો

વીંછિયો જળમાંથી જડ્યો રે અલખેલીના રસિયા.
 હનુમાનને મલિદો શાનો રે " "
 શિક્ષાતરને ચોખ્ખા શાના રે " "
 ખોડિયારને લાપસી શાની રે " "
 મારો હતો ને મને જડ્યો રે " "

નીચેના લોકગીતમાં સાસુજીનું આલેખન પણ મળતું અને પાસ્તવદર્શી છે :

અમદાવાદી જીજોરા જોર,
જોર મને ખટ લાવે.
મારા તે સસરા ખારે ગરાસિયા,
બાગમાંથી લાવી દે જોર,
જોર મને ખટ લાવે.
મારી સાસુડી બળી રાડ ફૂકડી
હાથમાંથી જૂટવી લે જોર,
જોર મને ખટ લાવે.

એવું જ ચિત્ર વહુનું મળે છે :

મારાં સાસુજી બૂંડાં, રમવા ટાણે દળણાં કાઢ્યાં.
દળણાં દળીને જઈશ, બડકું ભરડીને જઈશ.
મારા જેઠાણી બૂંડાં રમવા ટાણે જેઠલાં રે કાઢ્યાં.
પાણી ભરીને જઈશ, જેઠાં ફેડીને જઈશ રમવા.
મારા સસરાજી જુડા, રમવા ટાણે આપલા વાસ્યા.
આંપલા ઠેકી જઈશ, આંપલા ભાગીને જઈશ.
રમવા ટાણે આંપલા વાસ્યા.

લોકજીવનના વહેમો અને રૂઢ માન્યતાઓ પણ લોકગીતોમાં જ જોવા મળે છે .

મારી આંખલડી ફરકે ને મારા નખ નમે.
ફરકે ડાખા પગનો લાંક રે.
કોણ સાજનિયા આવશે રે !
ઝાઝી જોઈ રહી છું વાટ રે

આપણા ગામડાંઓમાં વસતા બોળાં ગ્રામજનોએ તો સાજનિયા(મહેમાનો)ને સદાએ આવકાર્યા છે. શુજરાતના લોકજીવનમાં આતિથ્યસત્કારની ભાવના તો એક આગવો આદર્શ છે. [એના ધન્યકારા આ ગીતમાં ઝલાયા છે] આ ગીત આની સાક્ષી પૂરે છે :

અમ ઘરે સાજનિયા ભલે આવ્યા રે.
સાજનિયાને ઉતારા ઓરડા દેવરાવો રે.
સાજનિયાને દાતણ દાડમી દેવરાવો રે.
સાજનિયાને નાવણ ફૂંડિયું દેવરાવો રે.
સાજનિયાને ભોજન લાપસી દેવરાવો રે.
સાજનિયાને મુખવાસ એલચી દેવરાવો રે.

પ્રાસનો રણકાર પણ એટલો જ કણુપ્રિય છે.

સાજનિયાને પોઢણ ઢાલિયા દેવરાવો રે.
પોઢણ ઢાલિયા લઈ સાજનિયા.
પાટ પક્કી અમ્મર બંધી.
પાટ ઉપર મોતી જડિયાં.

ધ	મોતીનાં	માન	ધણેરાં.
પડોને	પાંદડી	પડવી	વાગે.
ઢોલ	સરણુધ	ઝાંપે	વાગે.
અમ	ધરે	સાજનિયા	લલે આળ્યા રે.

આમ લોકગીતોનું ક્ષેત્ર લહેરાતા સાગર જેવડું વિશાળ છે. લોકગીતોના વિલિન્ન પ્રકારો, જેવાં કે-લગ્નગીતો, વ્રતગીતો, કથાગીતો, ઉત્સવગીતો, રાસડા, ફટાણાં, રાંદણગીતો, ઐતિહાસિક-ગીતો, ઋતુગીતો, બાળગીતો, લગ્નકીર્તન, ધોળ, હાલરડાં, છાંજિયા, રાંજિયા, મરશિયા વગેરે છે.

લોકગીતોમાં સંસ્કૃતિનું સુંદર દર્શન થાય છે રંગબેરંગી પાણીદાર મોતી જેવાં અનેક પ્રકારનાં ગીતો ગુજરાતને ગામડે ગામડે વેરવિખેર અને દટાએલી હાલતમાં પડ્યાં છે. એઓ મીઠા માંડીને સંશોધકોની રાહ જોઈ રહ્યાં છે. જો એઓનો સંગ્રહ જલદી નહિ થાય તો જૂની પેઢીની સાથે એ કાળની ગર્તામાં વિલીન થઈ જશે.

સુરત જિલ્લાની ગામીત (આદિવાસી) જાતિના પંચનું બંધારણ

શ્રી. ચક્રાંત વાઘેલા, અમદાવાદ

સુરત જિલ્લામાં છેલ્લાં બાર-તેર વર્ષથી આદિવાસી વિસ્તારમાં આદિવાસીઓની વચ્ચે વચ્ચે છું એટલે એમના રીતરિવાજો રોજ જોવા મળ્યા છે. એ રીતે દુબળા અને વન-પ્રદેશની આદિવાસી કામ ગામીત, ચૌધરી, વસાવા વગેરે જાતિનાં પંચના નિયમો તથા પંચ-પદ્ધતિ, તથા એ સમાજનાં જ્ઞાતિબંધારણ સમજવાની તક મળી છે. આ બધી જાતિઓના કેટલાક રીતરિવાજો, પંચપદ્ધતિ, વહેવાર વગેરે જાણવા જેવાં અને જોવાં જેવાં છે. જોકે મારે કહેવું જોઈએ કે એમના કેટલાક રીતરિવાજો, પંચપદ્ધતિ અને વહેવાર, એટલું જ નહિ, દેવપૂજન અને લગ્નગીતો, મનોરંજનનાં સાધનોમાં પણ ઘણું મળતાપણું આવે છે. અહીં સુરત જિલ્લાની જાણીતી ગામીત જાતિના પંચના રીતરિવાજો અને બંધારણ રજૂ કરું છું.

સામાન્ય રીતે અન્ય પ્રાંતોમાં પણ આદિવાસી પ્રજા જેમ પોતાના સમૂહમાં પોતાના વહેવારો, દેવપૂજન, ઉત્સવો વગેરે પંચની પદ્ધતિથી કરે છે તેમ ગુજરાતના આદિવાસી પણ પોતાનાં બધાં જ કામો પંચપદ્ધતિથી કરે છે. આ આદિવાસી સમાજમાં અજ્ઞાન, નિરક્ષરતા અને પોતાની જાતિના બંધારણની સર્વોપરિતાને લીધે આ વીસમી સદીમાં રાજ્યશાસ્ત્ર ખૂબ આગળ વધ્યું છે છતાં સરકારી નિયમો, કાયદા કરતાં પોતાનાં પંચ અને સામાજિક બંધારણને એઓ અધિક માન્ય ગણે છે, ને એ પ્રમાણે વર્તે છે. ખીજી રીતે એમ પણ કહી શકાય કે સરકારના બધા જ કાયદાઓ આ વિસ્તારમાં હજી પહોંચ્યા નથી. જંગલ ચિન્તાર, હુંગરાળ પ્રદેશ, હવા પાણીની મુશ્કેલી, અવરજવરનાં સાધનોની મુશ્કેલી વગેરે બાબતોને લક્ષમાં લેતાં આવા પ્રદેશમાં શિક્ષિત કુટુંબો અને સરકારી અમલદારો ત્યાં જઈને વસતા નથી, તેથી સરકારના કાયદાઓથી નીતિનિયમો શા છે એની જાણ એમને થતી નથી. સરકારી કાયદાઓથી આ પ્રજા અજાણ રહે છે એનાં બીજાં પણ એક બે કારણો પણ ધ્યાનમાં લેવા જેવાં છે. આ પ્રજા મોટે ભાગે સ્વાવલંબી અને પરસ્પરબલંબી છે. ઘણી મોટી જગડિયાતો ન હોવાને કારણે જુદાં જુદાં ઝીણા ઝીણા સંઘર્ષમાં ઊતરતી નથી, એટલે શહેરમાં રગતાની ડાળી બાંધી રાકું દાંદણું કે

જમણી બાળુ હાંકવું એનો ખ્યાલ એમને ન હોય સરકારનો ઋણરાદનો કાયદો જાણના ગામડે પહોંચ્યો જ નથી, કેમકે આ ગામડાઓમાં શાહુકારો સિવાય બીજા કોઈ બંધ જ નહિ કે એમને શાહુકારોની નાગચૂડમાંથી છોડાવવા ઋણરાદના કાયદાની વાત કરે. એ જ રીતે દિપતીનો કાયદો પણ ત્યાં પહોંચ્યો નથી. મને કહેવા દો કે સોનગઢ, ઉચ્છવનાં જિંડાં ગામડાઓમાં ગામના કારભારી જેવા ગણાતા માણસો જે-જે પત્નીઓ રાખે છે. પહેલાં તો જેટલી પત્ની વધારે તેમ એનો મન-મોભો વધારે એમ મનાતું, પણ આજે ઘણાં ઘરોમાં જે-ત્રણ પત્નીઓ વેતવા મળે છે. દારૂ'ધીના કાયદાની પણ જોઈએ. તેવી અસર જેવા મળતી નથી. એટલે કહેવાનો બાવાર્થ એ છે કે આદિવાસી વિસ્તારમાં સામાજિક, રાજકીય, આર્થિક, શૈક્ષણિક, સાંસ્કૃતિક રીતે નવા જમાનાની નવા સમાજની સાથે થાય ત્યાસુધી એમના પચના રિવાજો આવુ જ રહેવાના ગામીત સમાજ સુરત જિલ્લાના પૂર્વ વિભાગમાં જે-ચાર તાલુકામાં ગામડાંમાં વસે છે. ખામ કરીને સોનગઢ, વ્યાર, માગરોળ, માંડવી વગેરે તાલુકામાં વસે છે. હવે એમનાં રીતરિવાજો અને જ્ઞાતિબંધારણ જોઈએ.

જ્ઞાતિબંધારણ

આ જ્ઞાતિબંધારણ એટલે સમગ્ર એક જાતિનું સંગઠન. દાખલા તરીકે ગામીત કામ મુખ્યત્વે માગરોળ, વ્યારા અને સોનગઢ તાલુકામાં વસે છે તો એ આખા ત્રણ તાલુકાના ગામીત સમાજમાં દરેક ગામીત કુટુંબને એકબીજા સાથે મેટી મેટીનો સંબંધ ખરો. બધા જ ગામીત એક જ જાતિના. તેમ આ વિભાગમાં વસતા ચૌધરી, વસાવા અને દૂબળા સમાજમાં પણ એવું જ જેવા મળે છે.

આમાં એક જાતિ બીજી જાતિ સાથે સામાજિક વહેવાર ન કરે; જેમકે ચૌધરી સમાજની કોઈ પણ વ્યક્તિ ગામીત, વસાવા કે દૂબળાના ઘરનું ન ખાઈ શકે, ને લગ્નવહેવાર પણ ન કરી શકે. આમાં એક જાતિ બીજી જાતિને જી ચી ગણે તો બીજી પોતાની જાતિને જિંચી ગણે છે. આ દરેક કામમાં પણ જિંચા-નીચા જે વિભાગો છે. એટલે કે જિંચા ચૌધરી, નીચા ચૌધરી. જિંચા ગામીત અને નીચા ગામીત, જિંચા દૂબળા અને નીચા દૂબળા વગેરે પોતાના જ સમાજમાં જિંચા નીચા હોય તેની સાથે પણ એઓ મેટી-મેટી વહેવાર કરતા નથી; જેમકે જિંચા ગામીત નીચા ગામીતને પોતાની છોકરી ન આપે. એવી રીતે જે કોઈ કુટુંબ મોટું છોકરી આપે તો તેને ન્યાત બહાર મૂકે છે.

ગામપંચ

જેમ આખા સમાજનું એક સામાજિક બંધારણ તેમ દરેક ગામનું એક ગામદીઠ એક એકમ. આ ગામ સામાન્ય રીતે એક જ જાતિના લોકોથી વસેલું હોય છે; જેમકે કોઈ ગામમાં ૬૦ થી ૭૫ ટકા વસાવા જાતિનાં કુટુંબો જ વસે તો કોઈ ગામમાં વધુ ટકા ચૌધરીનાં હોય, તો કોઈ ગામમાં ગામીત કુટુંબના વધુ ટકા હોય. આ વિસ્તારમાં ગામોમાં કોઈ જાતિની વસતી ગમે તેટલી વધારે કે ઓછી હોય છતાં ગામમાં જેની પાસે જમીન, ઘર, દારૂ સારાં હોય તેઓની ગામમાં પ્રતિષ્ઠા વધારે. આવા સારી જમીન ધર-સપત્તિવાળા જ ગામના આગેવાનો હોય છે. આવા આગેવાનોમાંથી કોઈ કારભારી હોય, કોઈ પટેલ હોય, જે ગામના બધા જ પ્રશ્નોને સંભાળે છે.

ગામમાં કોઈ ચોરીનો બનાવ બન્યો હોય, કોઈ છોકરીને લગાડી ગયું હોય, કોઈ શાહુકારે કોઈના પર કેસ કર્યો હોય, મામલતદાર વગેરે અમલદાર આવવાના હોય, એટલું જ નહિ, ગામમાં

રોગ ફેલાયો હોય ને દેવ પૂજવા હોય, કોઈ ઉત્સવ ઊજવવો હોય, એ અંગેનો વિચાર અને નિષ્પત્તિ ગામનો પટેલ અને કારભારીઓનું પંચ કરે છે. આ વિચાર અને નિષ્પત્તિઓની જાણ ગામનો વેઠિયો આખા ગામને કરે છે.

ગામની વસ્તીના પ્રમાણમાં ગામના ડાહ્યા અને મોલાસર પાંચ કે સાત માણસોનું એક પંચ હોય છે, જે દરેક સભ્યને કારભારી તરીકે ઓળખવામાં આવે છે. પટેલ ગામના કારભારીઓની બધા જ કામોમાં મદદ લે છે. કારભારીઓ પણ ગામના બધા જ કામોમાં ભાગ લે છે. અને પટેલને મદદ કરે છે. ગામનાં અને સરકારનાં કામોમાં મદદ કરનાર એક વેઠિયો હોય છે જે ગામને કોઈ ખર્ચ આપવી હોય તે આપે છે, અવરજવરના ફેરા કરે છે, સામાન્ય રીતે પટેલ અને કારભારીઓને મદદ કરે છે.

ગામનાં બધાં જ કામો આ કારભારીઓ અને પટેલ મળીને સંભાળે છે. આખું ગામ સામાન્ય રીતે નીચેનાં કામો માટે જરૂર પડે તે બેઠું થાય છે:

(૧) ધાર્મિક-દેવ દેવીના પૂજન વખતે. સામાન્ય રીતે આખું પૂજન આખા ગામના લોકો ભેગા થઈને એકસાથે સમૂહમાં કરતા હોય છે.

(૨) ઉત્સવો ઊજવવામાં ગામના બધા જ લોકો ભેગા મળીને ઉત્સવો ઊજવે છે. આ પ્રસંગે સમૂહમાં ગીતો ગાય છે અને નૃત્યો કરે છે.

(૩) લગ્ન મરણ જેવા સામાજિક પ્રસંગોએ. લગ્ન, મરણ, છૂટાછેડા જેવા પ્રસંગોએ ગામ આખું બેઠું થાય છે ને જે તે પ્રસંગની તુલના કરી એ વખતના પ્રસંગની ચર્ચા કરે છે.

(૪) લગ્ન, મરણ, ચોરી વગેરે પ્રસંગે કોઈને અન્યાય થયો હોય તે ગામપંચને બેઠું કરે ત્યારે.

(૫) સરકારી કર-મહેસૂલ ભરવું હોય-યા એવા બીજા કોઈ સરકારી કામ અંગે આખું ગામ બેઠું મળે છે.

ગામપંચ મળે ત્યારે સામાન્ય રીતે ઘરનો જવાબદાર માણસ હોય તે ત્યાં અચૂક હાજર રહે છે. કોઈ સંબંધોમાં એ જરૂરી કામ અંગે બહાર ગયો હોય યા માંદો હોય તે; ઘરમાંથી બાઈ યા છોકરો પંચમાં હાજર રહે છે. સામાન્ય રીતે આદિવાસી સમાજમાં પોતાનાં કામકામને અંગે ગામપંચને બોલાવી પોતાના પ્રશ્નોને હલ કરવાની પ્રથા હજી જળવાઈ રહી છે; શહેરી સમાજની જેમ એઓ ઝટ ઝટ કોર્ટ ચડતા નથી; જો કે હવે જેમ જેમ આ સમાજમાં લઘુતર વધતું જાય છે, ઉજળિયાત કોમોનો સંપર્ક વધતો જાય છે, વિકાસ ઘટકો દ્વારા સરકારી અમલદારો સાથે સંપર્ક થયો હોય તેઓ હવે પોતાના પ્રશ્નો, ચોરી, છૂટાછેડા, મારામારી વગેરે માટે કોર્ટ ચડવા લાગ્યા છે.

સમસ્ત ગામીત જ્ઞાતિપંચની રચના

નામ:- ગામીત જ્ઞાતિ સમાજ

ઉદ્દેશ:- ગામીત સમાજની સામાજિક, આર્થિક, ધાર્મિક, નૈતિક અને શૈક્ષણિક ભાવનાને ખ્યાલમાં રાખી જ્ઞાતિનો વિકાસ કરી ઉન્નતિના શિખરે પહોંચવું.

કાર્યપ્રદેશ:- સુરત જિલ્લાનો સોનગઢ, વ્યારા માંગરોળ, માંડવી, વાલોડ, ચારડોલી, મહુવા અને વાંસદા તાલુકો. (ખીજે જિલ્લામાં જ્યાં છટીજવાઈ વસ્તી હોય તે)

કારભારી-દરેક ગામના લોકો પાંચ આગેવાનો ચૂંટશે, જે ગામના આગેવાનો યા કારભારીઓ ગણાશે.

ગામપંચ—ગામના દરેક ગામીત કુટુંબના સભ્યો દર ત્રણ વર્ષે જે તે ગામના સભ્યો ભેગા મળીને ગામમા પાંચ આગેવાનો ચૂંટશે. આવા આગેવાનો ગામપંચના સભ્યો ગણાશે.

વિભાગ

અમુક પટા કે અમુક વિસ્તારનાં ગામોનું એક જૂથ કે વિભાગ ગણાશે.

તાલુકાપંચ

દરેક જૂથમાંથી દર ત્રણ વર્ષે જે પ્રતિનિધિઓ ચૂંટાઈ આવશે તે તાલુકા પંચના સભ્ય ગણાશે. આ રીતે ચૂંટાઈ આવેલા સભ્યોનું તાલુકાપંચ બનશે.

સમસ્ત જ્ઞાતિપંચ

દર વર્ષે દરેક તાલુકાપંચમાંથી નક્કી કરેલી સંખ્યા મુજબ પ્રતિનિધિઓ ચૂંટાઈ આવશે તેઓ મુખ્ય મંડળના સભાસદો ગણાશે.

તાલુકાવાર પ્રતિનિધિ

સોનગઢ તાલુકાના પ્રતિનિધિ-૩

માંગરોળ	„	„	-૨
મહુવા	„	„	-૧
વાંસદા	„	„	-૨
માંડવી	„	„	-૨

વ્યારા તાલુકાના પ્રતિનિધિ -૩

વાલોડ	„	„	-૨
ખારડોલી	„	„	-૧
પલસાણા-કામરેજ	„	„	-૧
ઓલપાડ-ચોર્યાસી	„	„	-૨

કુલ- ૧૬

ઉપર્યુક્ત પ્રતિનિધિઓમાંથી નીચે પ્રમાણે હોદ્દાઓ ચૂંટાશે :

(૧) પ્રમુખ, (૨) ઉપપ્રમુખ, (૩) મહામંત્રી- ૧, (૪) સહમંત્રીઓ- ૩, (૫) ખજાનચી.

પ્રમુખ-ઉપપ્રમુખ, મંત્રી, ખજાનચીની ફરજો બજાવેલી છે. આમ એમનું સામાજિક મંડળ ચાલે છે.

સામાજિક લાગાઓ (લગ્ન અંગેના) અને રિવાજો

(૧) સામાન્ય રીતે આદિવાસીઓનાં પુખ્ત વયે જ લગ્ન થાય છે, છતાં નિયમ તરીકે ઓછામાં ઓછી ઉંમર ૧૮ વર્ષનો છોકરો અને ૧૬ વર્ષની કન્યા હોવી જોઈએ; એથી ઓછી ઉંમરનાં લગ્ન કરાવનારને જ્ઞાતિ ગુનેગાર ગણાશે ને રૂ. ૨૫ ના દંડને પાત્ર હશે જ.

સગાઈ

વરપક્ષ કન્યાને ત્યાં સગાઈ કરવા જાય ત્યારે મોટે ભાગે ૨૦-૩૦ જણ જાય છે, પણ હવે મોઢવારીને લીધે ૫-૧૦ સ્ત્રી-પુરુષો લઈ જવાં એમ નક્કી કર્યું છે. કન્યાપક્ષની એ સખંધ અંગે મંજૂરી મળે તો ગામના આગેવાનોને બોલાવવામાં આવે છે, આ વખતે હાજર રહેલાઓને રૂ. ૧૦નો ગોળ કે ખજૂર લાવીને વહેંચવામાં આવે છે. સાદું ભોજન પણ કરાવે છે. સગાઈ વખતે કન્યાપક્ષની બહેનો ગીતો ગાવા આવે તેને સવા રૂપિયો આપવાનો રિવાજ છે. અને કન્યાને કપડાં, ઘરેણાં ચડાવે ત્યારે થાળીમાં સવા રૂપિયો મૂકે છે. એક વખત સગાઈ થઈ ગયા પછી બેમાંથી કોઈ એક પક્ષ સગાઈ તોડે તો રૂ. ૨૫ નો દંડ પંચ લે છે.

દહેજ

કન્યાને વધારેમાં વધારે રૂ. ૪૫ દહેજ આપવાનું નક્કી કર્યું છે. આ ઉપરાંત લગ્ન વખતે વરપક્ષ શક્તિ પ્રમાણે ધરેણું આપે છે. દહેજની પ્રથા પરંપરાગત આલી આવે છે. જ્ઞાતિપંચની રૂબરૂ જથ્થો આપવામાં આવે છે.

કેટલાક લાગાઓ

જનૈયાને વળાવતી વખતે રૂ. ૫૦ કન્યાપક્ષની ગીત ગાવાવાળીને લગ્નવખતે રૂ. સત્કારવાની રીત (ઝાંપલીની રીત) ૦૥ ગોવાળિયાની ૦૥ વ્યવસ્થાની રીત ૦૥ લગ્ન પછી કન્યાને જમાડતી વખતે બાજુ પર મૂકવો ૧૥

અણુવર

૦૧

પહેલી રાતે લગ્ન પછી કન્યાને ખાંધ પર બેસાડી નાચવાની પ્રથા હતી તે રીત અને તેનો લાગો કાઢી નાખવામાં આવ્યો છે.

પહેરામણી

લગ્ન વખતે કન્યાને વરપક્ષ તરફથી સાડચો નંગ-૧-ચોળી નંગ-૧ અને સંપત પ્રમાણે ધરેણું આપવામાં આવે છે.

લગ્ન પ્રસંગે ડોબરું નામનું વાજિંત્ર વગાડવાવાળાને બોલાવવામાં આવે છે. એને આખી રાત ડોબરું વગાડવાનો સવા રૂપિયો આપે છે. હવે લગ્નમાં લગ્નમંડળીઓ લઈ જવાનો રિવાજ પ્રચલિત બનવા માંડ્યો છે.

લગ્ન પ્રસંગે ફાળભાત અને શાક જેવું સાદું ભોજન આપવામાં આવે છે.

આણું

લગ્ન પછી પાચમે દિવસે કન્યાને પિયેરિયાં બોલાવવા જાય છે. આ વખતે કન્યાને અનાજ અને ૦૥૥ રૂ. આપવામાં આવે છે અને કન્યા સાથે આવેલ અણુવરને પણ અનાજ ઉપરાંત ૦૧ રૂ. વરપક્ષ આપે છે.

ખંડાડિયો (ઘરજમાઈ)

આ સમાજમા પોતાની દીકરીને સાસરે મોકલવા કરતાં એને માટે પોતાને ઘેર ઘરજમાઈ લાવવાનું વધુ પસંદ કરે છે. ઘરજમાઈ લાવે ત્યારે સગાઈ અને લગ્ન વખતે જે વિધિ કરવામાં આવે છે તેવી જ વિધિ કરે છે.

છૂટાછેડા

ગામીત સમાજમાં અન્ય સમાજ અને આદિવાસી સમાજની જેમ જ છૂટાછેડાનો રિવાજ છે. છૂટાછેડા વખતે દહેજ ઉપરાંત પંચ કડે તે પ્રમાણે પૈસાની આપલે થાય છે.

ગામીત સમાજમાં સ્ત્રી પોતાનો ધણી હોય છતાં ખીજ સાથે આડો સંબંધ કરે તો એના નિયમો ધણા કડક છે. સ્ત્રી કોઈ સાથે નાસલાગ કરે તો સમાજ એની પાસે લારે દંડ લે છે. લગભગ રૂ. ૩૫૧ જેટલો. પુરુષ એ રીતે કરે તો લગભગ રૂ. ૨૫૧-૬૦૦ લે છે. આ રકમ પંચ પછી છોકરા છોકરીના આપને સોપે છે.

કોઈ પુરુષ જ તિ - ન્યાતિ બહાર કોઈ છોકરી સાથે આડો સંબંધ પાડે તે સાબિત થાય તો રૂ. ૨૫ થી માંડીને રૂ. ૫૧ સુધી દંડ થાય છે.

પુનર્લગ્ન

વિધવાને પુનર્લગ્ન કરવાની છૂટ હોય છે, બાળક ન હોય તો દહેજમાં રૂ. ૩૫ આપવાનો ને બાળક હોય તો રૂ. ૨૫ આપવાનો રિવાજ છે.

આ સમાજના કોઈ પણ ઇસમને પોતાના કોઈ પણ પ્રશ્ન માટે જ્ઞાતિપંચને ભેગું કરી ન્યાયની માગણી કરવી હોય તો કરી શકે છે. આ માટે એણે નીચે પ્રમાણે લાગો આપવો પડે છે :

ગામપંચ ભેગું કરવા રૂ. ૫

તાલુકા પંચ „ „ ૧૫

સમસ્ત જ્ઞાતિપંચ „ „ ૨૫

મારી ઇચ્છા હતી કે આ વિભાગમાં વસતી બીજી આદિવાસી જાતિઓ—ચૌધરી, વસાવા, દુબળા વગેરે જાતિઓના રીતરિવાજની આ સાથે જ ચર્ચા કરું, પણ આમ કરતાં લેખ ઘણો લાંબો થઈ જાય. બીજા કોઈ પ્રસંગે બીજી જાતિઓના જ્ઞાતિપંચારણુ રજૂ કરવાની ઇચ્છા છે. અસ્તુ.

MANU'S IDEAS ON SOCIALISM, RELIGION AND ETHICS*

Dr. Rameshchandra Sundarji Betai, Dwarka

Introduction :

On the basis of the study of the Manusmṛti, with a subject-wise analysis of the different Adhyayas and with an attempt at understanding the ideas of Manu, without inflicting our own views and interpretations on the author, we select for discussion three topics that very much concern our modern life. It should be accepted that Manu has not quite independently discussed the topics, but his ideas can be scanned and generalised on the basis of his discussion on the various sociological topics. The three topics are, Manu's ideas on Socialism, Religion and Ethics.

His Ideas on Socialism

The days and society of Manu, with its Varna and Ashrama Dharmas,¹ had its own peculiar socialism that can be discussed on the basis of the following:

- (i) Relation between individual and Society
- (ii) Novel Idea of Duty
- (iii) Liberalism, Service and Sacrifice
- (iv) Prevention of Hoarding and Corruption
- (v) King—a Trustee of People's Rights
- (vi) Conclusions

We may now develop each of the topics

(i) Relation between Individual and Society

Manu has brought about a wonderful unity between the individual and society. His first principle is the avoidance of all clashes between the two. Both are

* This is an abridgement of the chapter of the same name in my Thesis for the Ph. D. Degree approved by the Gujarat University in 1956.

1. Discussed in chapters 2 to 6 and 9.

dependent upon each other and fulfill each other's needs. All the topics are treated from both the individual and social points of view. To illustrate, the society is expected to help the needs of the students² and the ascetics and the knowledge and achievement of the latter are placed at the feet of the society. In matters of Marriage, society inflicts its rather strict code of morals on the individual, while the individual, man in particular, has great choice and freedom in marriage.³ The social code of morals is rather strict with regard to woman,⁴ but her protection, security, honour, maintenance etc.⁵ are jealously guarded by the society. Several social restrictions are there on the individual regarding his caste etc., while on the other side, his occupation, bread and status are properly guarded and it is the most important peculiarity of the VARNA DHARMA that it assures an individual of the finest profession exactly in co-ordination with his natural leanings and inheritance and this way, competition of the unfair type is also avoided.⁶ The Varna Dharma has been rightly known as the real socialism of the Hindus. In the social structure of Manu, the social order and the individual have both equal scope of development in such a manner that, not only may there be the least of clash between the two, but, both may co-operate the greatest development of each other.

(2) Novel Idea of Duty

Normally we are told that rights and duties go together. Man must do his duties and then fight for his rights. Manu does not agree here in so far as he believes that (a) duties go first and man must jealously worry about his duties only; (b) There is no question of fighting for right because the first right of man is to do his duties; (c) Rights in their own way follow naturally; (d) Higher the status of man, lesser his rights and greater are his duties—the king having the highest status, heaviest duties and gravest responsibilities and fewest rights.

(3) Liberalism, Service and Sacrifice

With this idea of alertness about duties, and its jealous performance, is associated the idea of liberality, and the spirit of sacrifice. In practice, Manu seems to expect the individual to inflict a harsh, strict way of a simple life for himself and to become liberal towards others. Man should not ever seek

2. Chapter 2, verses 183 to 188 Also 3.94 to 96

3. Chapter 3 and 4

4. Chapter 3 and 9

5. The ideal about the honour etc. of married women is that—In all the four castes woman is always to be protected.

6. "Varna Dharma is social planning, in which the spiritual, educational, administrative and economic functions are attached permanently."

for himself alone, says one verse in Manu,⁷ and he asks man to feed even the servants of the house first and then himself, and his wife.⁸ He asks man to spare at least an atom from even his little earnings for others. He gives a wonderful idea when he seems to believe that, not only human beings past and future, but even animals and birds have a claim on what man earns. He thus calls upon each one to think more of others and less of himself and surely, the result will be that the life, work and honour of all will be secure.

(4) Prevention of Hoarding and Corruption

Again Manu takes amplest of measures to prevent hoarding and corruption. He does not allow the exploitation of one class by the other in society. Even the Shudras, who are asked to serve the upper classes, are not to be unduly exploited. Manu asks the Shudra not to collect wealth,⁹ so does he expect the Brahmana and the Kshatriya not to hoard wealth.¹⁰ He further asks man to select for his occupation one by which he will do no harm or the least of harm to the interest of others.¹¹ Again, work and labour are praised and Manu asks men to collect wealth that will last for a maximum period of three years while the best householder is one who earns daily and spends daily. If this ideal is followed, there will be little centralisation of the social wealth and the society will find few rich growing richer and the poor poorer. There will be little exploitation of the have nets at the hands of the haves. All will work and earn their bread.¹²

(5) King—a Trustee of People's Rights

Even though in theory, the king is all powerful, in actual practice, he is almost a trustee of the rights, safety, protection and happiness of the people. We must agree that there is no reference to village communism, yet, there is the least scope for the king to meddle in village affairs, and in the affairs of the Srenis, Gana, Jatis etc. Yet another important fact is the Srenis, Gana etc. have their own rules, which in normal cases, are respected by the king, who usually does not interfere in their working. Even the political power is thus not centralised in one authority. Man is normally governed by the guilds and corporations etc. and not by the king. The common man will thus feel almost no burden of the all powerful dictatorship of the king. The normal life of the common people will rarely be disturbed even if kings and regimes change.

(6) Conclusions

Thus, it can be seen that Manu's socialism is typical in so far as (i) It does not embrace the political field only; (ii) Monarchy is not ousted; (iii)

7. III. 118 8. III. 116 9. X. 129 10. IV. 7, 8, 10, 12 11. IV. 2

12. The ideal of dignity of work and labour is greatly respected. Yet, no nationalisation of the key industries is necessary. The state, society and the individual all have their economic problems solved to great extent

The ethical side of life is not given up; (iv) Care is taken to see that all work at bread and there is the least of disturbance to the social fabric; (v) Exploitation of one class by another is avoided; (vi) The normal life of man is to go on with the least of disturbance; (vii) All contribute their might according to capacity and social status and all worry principally about the duties.

His Ideas On Religion

It is interesting to note that inspite of the great hold of religion on the mind of the Hindu in those days there was hardly any state in India that could be called religious. No state was Hindu or Brahmin state and there were states in which Shudras were rullers. Religion, faith in God and spiritualism guided all the states in the country. In every government there was a Purohita who looked after the religious and spiritual side of the government. Actually the general grand principles of religion guided all the states in the country. These great principles may be found to be in existence in most of the religions of the world more or less. Yet it seems that Manu's approach to these is new. The following are the common general principles of religion that Manu follows : (i) Work is Worship; (ii) Duty is the Ideal; (iii) Truth is God; (iv) Plain living and High Thinking; (v) Faith in Gods, Sages and the Vedas; (vi) Faith in Life and in one's Self; (vii) Universal Love and Sacrific; (viii) Control of Body, Mind, Heart and Soul; (ix) The Great emphasis on Morality.

Let us now understand each of these topics in a few details.

(i) Work is Worship

It should be noted that Manu allows no place to idlers in his society. Right from the king to the beggar all have to toil and work hard for the social good. Eternal ACHARA is man's Dharma. Dignity of labour—nobility of work is the first doctrine of the Dharma of Manu. Self-help is the ideal taught to man right from the student days, right from birth. Karma must be done and Karma conceived as duty is the ideal.

(ii) Duty is the Ideal

The first and foremost meaning of Dharma is duty. Duties are eternally fixed. Man's duty to family, Varna, Ashrama, guild, corporate body and the society as a whole come first and the duty of the liberation of one's self comes last. In his ideal society, he expects all to worry about their duties and this is a grand ideal indeed. Human nature is such that if all concentrate on their duties, rights will automatically follow, while the reverse is not true.

(iii) Truth is God

The importance of Satya in life is emphasised by all religions. Manu has an interesting thing to state in the matter. He states,

सत्यं ब्रूयात्प्रियं ब्रूयान्न ब्रूयात्सत्यमप्रियम् ।
प्रियं च नावृत्तं ब्रूयादेष्ट धर्मः सनातनः ॥ ११

Here, he asks man to bring about a unity between the true and the pleasant in life. SATYA is an important virtue for all the four Varnas, the Aryas. The word SATYA can properly be taken in the sense of truth to one's self, family, Varna etc. Honesty, sincerity etc. are included in it.¹⁴ The thief who steals is asked by Manu to go to the king and confess his guilt of his own. The sinner is asked to approach a Brahmana, or a learned man or an assembly of the learned and confess his guilt.¹⁵ Truth is the ideal of the life of the student and of course of all the Ashramas. For uttering falsehood, heaviest spiritual punishment is laid down. As a general rule it can be stated that according to Manu life is nothing if truth does not prevail in it. Truth in life is truth to God.

(iv) Plain Living and High Thinking

Realisation of God has been laid down as the highest purpose in life of man. Therefore, it is the duty of the student to study regularly at all the moments of his student career.¹⁶ It is also the duty of the householder to study regularly.¹⁷ In this best of the Ashramas,¹⁸ his life is expected to be that of toil and duty, while he is called upon to keep his soul ever awake. Man is a student throughout life and VIDYA is the best coveted treasure. Deepest satisfaction comes from plain living and high thinking. This ideal only leads man to real happiness in life. Man is asked to become a beggar in his needs and an aristocrat in his knowledge. The Snataka Grihastha has stricter duties, harder life and higher thinking and no permission to hoard wealth or enjoy it too much. So is the case with Vanastha and Samnyasin. Many ills of life would be no more and the extremes will always be avoided if this path is followed, because there will be real moderation in life and the highest attainment in his spiritual rise, because VIDYA and the consequent high thinking lead to that.

(v) Faith in Gods, Sages and the Vedas

Even in the modern days of rationalism, Shraddha is essentially the basis of man's life as man. Faith keeps the conscience awake and the heart pure. Faith makes man liberal and large-hearted. This is denoted by the SHRA-DDHAS¹⁹ and the five great sacrifices²⁰ in the Manusmṛiti. Faith gets a concrete shape and sound basis when this is expected to be faith in the gods, sages and ancestors. Sages are our real ancestors in the cultural field and our guides in life. They saw the Vedic mantras with divine inspiration and we get these as a sacred, authoritative cultural heritage in form of the Vedas. Again

14. VIII. 314, 315. IX.99,100 18. III. 77, 78

15. XI. 76, 82, 83, 85 etc.

16. II. 191

19. III. 123 onwards

17. IV. 17. 19. etc.

20. III. 57, 70 etc.

it is these sages that gave us our faith in gods. We should have the staunchest faith in the Vedas because they are the very root and food of our whole culture.

(vi) Faith in Life and in One's Self

In the last chapter of the work, Manu has prescribed the doctrine of SAMYAK KARMA in contrast to the doctrine of Nishkama Karma prescribed by the Gita. Manu has insisted that good and noble Karma is always necessary²¹ and man must also win his reward for the good that he does. He should do his duty and win fame in life. Man must attach his self to his Karma. Manu states this due to his faith in man, his life, conscience and essential goodness. Life is not bad, work is necessary, duties are unavoidable and both material and spiritual reward should be aspired after. This is because to Manu man is essentially good and man's is the noblest birth and life offers the greatest chances to him to rise to God, to union with God. Thus, eternal Achara²²—duty, aspiration after the material and spiritual rewards,²³ everything results from unstinted faith in life and one's own self.

(vii) Universal Love and Sacrifice

Through his five great sacrifices, Manu associates man with ties of love and devotion with Sages, Gods, ancestors, men and animals and birds. His conception of society thus embraces the whole Universe and man has a duty with all the five mentioned above, because all these contribute to man's development of personality. Manu's religion therefore teaches universal love and wherever there is love there is the spirit of giving and sacrificing. Giving and sacrificing are daily duties and unavoidable duties. It is not the duty only of the sages to cultivate this spirit of love and sacrifice but of all including the students and the householders. Man's life itself is a big YAJNA, a big TAPAS wherein by slow degrees, man sacrifices whatever he can and that too, within the reasonable limits of his capacity. TAPAS, as is expected of the student, the Grihastha, the Vanastha and the Samnyasin, is sacrifice and suffering with the deepest faith and love in the heart with the fullest awakening of the conscience.

(viii) Control of Body, Mind, Heart and Soul

Self-control is the first taught to the student.²⁴ Real bravery, nobility and PURUSHARTHA lie, not in the thoughtless enjoyment and slavery to passions, but in the proper control over the same and a sense of propriety about every thing. All the four Ashramas require this control of body, mind, heart and soul almost to the same degree. This is not surprising because man's full personality develops only through the four stages and what is of importance to the first must be so to the other. Even the Grihastha like the BRAHMACARIN is expected not to give freedom to his sex and passions but to cultivate a proper

21. II. 2 to 5

23. II. 9

22. I. 107 to 110

24. II. 174

control and make sex a normal and moderate need in life. He is in this sense expected to become a Brahmacharin in life,²⁵ with the touch of passion and lust disappearing from his daily life. It should be noted that Manu is mainly worried about making man moderate in his sex needs and make him conscious and alert about the fact that the joys of this life are transitory. Manu allows just, reasonable and judicious joys and preaches gradual sublimation of the instinct and emphasises real self-control as the greatest Purushartha.

(ix) Emphasis on Morality

Manu has never shown any dislike towards married life, woman or sex-life. He is not opposed to joys, material or sexual of life. He wants the average man to marry and have all the reasonable joys of married life. He brings in the spirit of uplift even through married life by placing the stamp of morality and propriety in all the dealings of man. He is opposed to excesses and extremes. In one important sense, Dharma means morality as we have already seen. His emphasis on morality is free from any prejudice or dislike or hatred and none of his moral rules and ways of restraint have the touch of impossibility about them.

This is Manu's religion. It can easily be called Universal Religion, humanitarian religion. It can apply to all the cultures at all times in all the countries. These are the choicest elements of the Hindu Religion, they are eternal, they make the Hindu Dharma universally applicable and explain why the Hindus have faced the greatest attacks and onslaughts and have lived.

Manu's Ethics

The above discussion will help us a lot in fixing Manu's ideas on ethics.

In his treatment of these sociological topics, Manu is both practical and an idealist. He never follows tradition blindly and always gives his own views that differ from tradition and prevalent customs whenever necessary.²⁶ He yet does not dissociate himself from the practical reality of life. After taking for granted man as he is, after knowing all his limitations, he frames his rules in such a way that amplest scope will be available to man to develop his personality. Harsh, ruthless rules of conduct and morality are not laid down. As an ardent sociologist, he loves man with all his weakness and he guides him without any prejudices²⁷

25. III. 50

26. As an illustration may be quoted his love for monogamy as an ideal, his respect for woman, his views on Niyoga and so on.

27. Thus, Manu's ideal is marriage with an equal, but, just to regularise man's passions he allows him to marry any woman, even of the low caste. Truth is the general rule, but falsehood is allowed in certain cases like the saving of Brahmana. In the normal course, one should take instruction from a Brahmana teacher, but in times of crisis, instruction from a non-brahmin is also allowed.

The great thing about the ethics of Manu is that it is not meant to hinder man's progress in life by mere idealism and impossibilities. It is the ethics of one who wants man's life to have convenience and fascility of progress and a hope for all. With all this, the greatest standards of morality and ethics are not forgotten. His is the ethics not of a pessimist. The following points should be noted in this ethics:—

- (i) Avoidance of the Extremes
- (ii) Ideal of each according to his need
- (iii) Ends and Means
- (iv) Apatkala
- (v) Himsa and Ahimsa
- (vi) Practical Code of morality
- (vii) Opposition against undue restrainsts, fasts etc.

Let us now examine these in a few details.

(i) Avoidance of the Extremes

As Manu's rules are to be observed by the common man, he lays down the highest ideals and at the same time, gives so many options. It is his purpose to make man's life successful and at the same time, he wants man to win spiritual uplift. He therefore makes man's life partly material and partly spiritual. Extreme materialism and this worldliness as also extreme spiritualism are bad. The duties to this life must be fulfilled as a rule before duties to the spiritual life are undertaken.

(ii) Ideal of Each according to his need.

All men are not equal, their rise and leanings are not the same. Men do not aspire after the same spiritual heights or the same wordly fame or prosperity. Manu therefore believes in the principle of each according to his need. Thus, the Shudra is not required to observe the Samskaras or resort to the higher learning of the Vedas, and so, he can rise higher, if he cares and wills, much easier than a Brahmana. Again, there will be some who desire absolutism by slow degrees. While there will be some others who will desire instantaneous release. For both, Manu shows the way. Thus, the need and inclination of man play an important part in his rise and hence this attitude of Manu.

(iii) Ends and Means

That ends only justify the means is a poor doctrine of the atheists. The general rule of Manu is that both the means and end must be good. Good end cannot be attained to by bad means. The ends of man must be good both from the individual and social point of view. Honesty, truthfulness, lack of greed, absence of violence etc. are the guiding principles in all the actions of life. Only good ends attained to by good means help man to realise the highest aims of life.

(iv) Apatkala

The rules that are laid down by Manu are those to be observed in the normal course of life. The behaviour of man cannot be expected to be the same and ideal in times of crisis, known as APATKALA. What should a man do in times of crisis? What should be his behaviour when all the ideals cannot be adhered to in Apatkala? What should he do if his family starves? What should he do if he starves by his own caste-occupation? The solution of Manu is that in the normal course of life, man should live ideal, think ideal and noble, and act ideal, noble and wise. He should observe all the rules of the Shastras then. But in critical times, he can set these rules aside. He can tamperably give up his own ideal. The most important thing then for him will be to keep his body and soul together, to maintain his family at all costs. A man in critical times may maintain his self and family by any lower occupation, he may resort to any means to live.²⁸ Under exceptional circumstances, discarded women are allowed to remarry,²⁹ and a very wise provision is made for the child widows. This is a very important discussion and a man under pressure of crisis commits no ethical offence if he makes a sincere effort to keep his family and self in life.

(v) Himsa and Ahimsa

The primary purpose of ethics is to make man live decently, orderly and to rise gradually in life. Manu's ethics is meant to make man happy, live decent, think noble, behave wise and attain to divinity. There, his conception of Himsa and Ahimsa is peculiarly original. The general rule is non-killing of and non-hurt to animals to whom men offers food as a Grihastha.³⁰ Man is asked to avoid as far as possible, the killing of animals for food.³¹ But Manu's definition of Ahimsa is not meant to make life impossible. Normally, a Brahmana is not to be killed with all his sins,³² but in self defence, one can kill him if attacked by him.³³ In times of calamity, man can kill animals even the prohibited ones and eat them. Again, if animals are slaughtered during and for sacrifice, this is not Himsa. Manu seems to justify his contention by stating the eternally true rule that only the fittest survive and that the weak shall be ruled by the strong.³⁴

(vi) Practical Code of Morality

We had a long discussion on morality and the practical side of it. Suffice it here to state that Manu does not lay before man an impossible code, while on the other side, he does not give undue concessions. The practical and the ideal are both properly knit together.

28. X. 81, 83, 102 to 108.

29. IX. 76

30. III. 81.

31. VIII. 380.

32. VIII. 350, 351.

34. V. 29.

33. V. 44.

(vii) Opposition against Undue restraints and fasts etc.

A very important rule in the duties of the Grihastha is the avoidance of undue fasts, restraints etc. Manu asks the Grihastha not to torment his body without any reason. The body and soul must be kept together. Man should not fast till he is in good health. He should not put on dirty garments and should not enter into undue dangers. Life is not to be hated, the whole of the Dharmashastra is written for upholding life and all that it offers.

Those ideas of Manu, on the three topics are, it hardly needs to be stated, universal in character. They apply more or less to all times and climes. They show the right way to man to be happy and successful in this life as also happy and successful in the life hereafter. The idea of social and individual good is the root of the whole ideology. Here it is that Manu shows himself a true and tried sociologist. This importance of Manu can never be under estimated.

CONCLUSION

Manu's Ideas on Socialism, Religion and Ethics

On undertaking a subject-wise analysis of the Manusmriti and studying each topic on modern critical and analytical lines with-out allowing any sectarian influence to effect us and noting carefully the virtues and limitations of the commentators, we come to very much interesting conclusion on three very general topics of Manu's Ideas on (1) Socialism, (2) Religion and (3) Ethics.

Ideas on Socialism

The Varna system of Manu leans towards Varna by birth and yet the old ideal of Varna by virtue and action (Guna and Karma) is fully accepted. The Ashrama Dharma is also typically Hindu and systematically developed in the Manusmriti. These two combine to give a very clear rational and original idea of Manu's concept of socialism. The most outstanding peculiarities of this idea are : (1) Development of the most cordial relation between individual and society in such a way that becoming mutually dependent and avoiding all conflicts as far as possible, individual and society cater to each other's finest development. (2) The conception of duty lays down a thorough consistent consciousness of duties to the society first and duties to one's self last, and rather little of worry about rights. (3) This is possible only with a conscious liberalism of mind and spirit of service to society in such a way that all decide to give the maximum to the society with minimum of return. (4) Prevention of hoarding and corruption are laid down and the ideal is to glorify labour and hard work when it is said that one who earns daily and does not hoard wealth even for one more day is the best man. (5) Manu's acceptance of kingship and monarchical form of Government is also symbolical of this in so far as the king is made a trustee of the rights of people and assures full protection, security, right to labour and earn to all.

Ideas on Religion

In the oldest days, even though the general tenets of religion influenced all, there was hardly any religious state in India. Manu's common general principles of religion apply to all men and societies of all times and climes. The outstanding ideas are:— (1) Work is worship; (2) Duty goes ahead though rights may or may not follow; (3) Truth is God; (4) Plain living and high thinking is the best ideal; (5) Faith in Gods, Sages and Vedas that give our culture to us; (6) Faith in life and one's self; (7) Universal love and sacrifice; (8) Control of body, mind, heart and soul; (9) A very great emphasis on morality.

Ideas on Ethics

Manu is both practical and an idealist. Taking man for granted as he is and having supreme faith in his humanity, he develops an ethical code that is, like his Universal Religion, a Universal code of Ethics. The outstanding ideas influence his whole treatment of sociological problems. The ethical ideas are.— (1) A careful avoidance of extremes pertaining to this and other life; (2) The ideal of each according to his need; (3) Ends and means both should be essentially good; (4) In Apatkala loose behaviour is also allowable; (5) Ahimsa is great and noble but its blind following is not good; (6) Too many and too stiff restraints are not good; (7) The code of Ethics is practical and sees to it that it gives the largest scope to man to develop himself to the highest in this life and the highest also in the spiritual life.

CHANGING CASTE SETTLEMENTS AND COMMUNITY IN A VILLAGE OF CHAROTAR REGION IN CENTRAL GUJARAT

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I propose to deal with the following salient aspect of rural social structure the birth, growth, development or decay of village settlement; beginning and rise of separate caste settlements; the principles and dynamics of rural ecology of Charotar; disintegration of nucleated settlements and their transformation into nucleated-cum-dispersed hybrid settlements; social stratification; hierarchy of castes and occupations; scale of social distance; changing pattern of inter-caste relations; social differentiation; sociology of Jajmani-Gaur-Basvayun system; caste-cum-occupational mobility; vertical ties and the rise of factions; strengthening of horizontal ties, particularly among the lower castes; expansion of the kinship area; rise in the age of marriage and the rapid rise in the education of girls, particularly among the higher castes; breakdown of the joint family and the consequent change in parent-child relationships; communication of individualistic, competitive and egalitarian ideas; expansion in the area of exchange of goods and services; effective expansion of the ritual region of re-

ligious activities; manifest in the rise of pilgrimage; changing political life and leadership; chief planks or prime-movers of social change in the countryside; and finally the direction of change. There is an emphasis on change, and dynamic analysis is preferred to the static; qualitative analysis is preferred to quantification and statistical manipulation.

The Village Morad

According to geneological records maintained by the Barots—caste geneologists of Barias and the Patels of the village staying in Baroda, and of other castes staying at Ahmedabad, Mehsana and Dakor, village Morad was founded about 625 years ago, by Patels and Barias from Sojitra, an old town situated 8 miles north of Petlad on Petlad-Nadiad Road. Its distance from Morad is 16 miles. Village Morad in Charotar Region of Gujarat is situated on 39° N latitude and 58° E longitude, three miles west of famous village Karamsad, the place of Sardar Patel, one and a half mile south of the Anand-Petlad Road which goes upto Cambay; the extreme west sea-coast is 36 miles, Anand 10 miles, Petlad 8 miles, Nadiad 22 miles, Borsad 8 miles, Baroda 32 miles, Ahmedabad 50 miles. It is a medium sized village with a population of 2,207 according to 1961 census. It has registered 30% increase since 1951.

The village is a typical random stratified sample of a Charotar village which is neither very small, nor very big, neither too near nor too far from the towns and cities of the region, neither too prosperous nor too poor, neither too much acculturated like the proverbial Karamsad nor too isolated, and finally which has all the important cases of the region, in it, the Patels as dominant caste, though in numerical minority, the Barias in overwhelming majority coming up and challenging this domination, and other important castes, such as Brahmin, Patanwadia, Valand, Suthar, Rawal, Dhed, Mochi and Bhangi. I cannot say that all the considerations were perfectly satisfied and it was our ideal sample, but it did satisfy, more than others, the conditions which we were on the look out.

The study of a village in the context of the region

No village in recorded history, I can safely say this, has remained self-contained or isolated. Morad too, has been intimately connected and associated with its region—the Charotar. Instead of making self-contained studies of a single village, it would be worthwhile and theoretically fruitful to study the village in its regional setting. Hence, we have throughout kept our eye on this fact which needs perhaps greater attention than it has received so far. This would not only give us an assessment of the inter-village, rural urban interdependence, but would also give us a better insight into the prime-movers of change.

Charotar region of Gujarat

In 1921 Census of India, Baroda State, I, p. 9., Charotar is defined as, "The Petlad and Bhadran Mahals are situated across the Mahi on the north-west, and have sufficient natural affinities of soil and of the character of its population to be grouped under one name. This trans-Mahi area together with Anand and Borsad Talukas of the British districts of Kaira forms, what is known as Charotar, one of the historic divisions of Gujarat, noted for the high fertility of its soil. Charotar has lent its name to one of the dialects of Gujarati and is the home of Lewa Patidars the aristocracy of Gujarat agriculture. The soil is of the recent alluvial formation, mostly light (gorat) or a little mixed (besar) in colour and capable of producing all kinds of crops. Charotar is the most congested portion of the State, it is hereby that agriculture is the most intensive "

Now we shall take up the salient features of the social structure of our village one by one.

Birth and growth of the village settlement regional rural ecology

The present village Morad, as indicated above, was founded about 625 years ago, by some Patel patron from Sojitra. Brahmin first entered as Gaur-priest functionary and later took up to business and purchases of land; Baria settled chiefly as agricultural tenants and labourers; Valand-barber, Suthar-carpenter, Rawal-Drummers, Dheds-Vankar-weavers as Basvayuns-menial functionaries in the village-the word Basvayun literally means those who were allowed to settle down. The village had some other functionaries also, who came from outside from the neighbouring villages. They were the Dhobi-washerman and the Kumbhar-potter. The Patels comprise the dominant caste in this region. They were the big landlords in the past. Even after the formal abolition of Zamindari, they have been able to retain the major portion of land by dubious legal devices, such as partitioning of the property among the brothers, and ejecting the batai-share-croppers, and reducing them to the status of casual field labourers. Thus the Zamindari abolition has not much affected the division of land and has not resulted in any radical structural change as far as the landlord-tenant relationships are concerned.

The dominant Patel patron invited different functionaries of the Jajmani system to the village he founded, and allotted them separate plots which gradually developed into distinct falias-caste compounds and thus gave birth to a caste housing settlements, which persisted even to this day for evident reasons despite the decay and disintegration of the Jajmani complex.

No open land is available in the village, a constant increase in population has only resulted in rising congestion in the limited space provided by the former patrons. Even if some land is still available for expansion, it is under the jurisdiction of the village panchayat, and the panchayat even to-day, with

its apparent democratic and inter-caste set up cannot countenance mixed inter-caste settlements.

Thus we are presented with a paradox. Though the occupational basis of caste, and traditional division of labour has given way under the impact of secular forces, its rigidity in housing, neighbourhood, peer groups, social participations; primary groups is still intact and unaffected. It still reinforces the 'consciousness of kind' which is stronger than the loyalty to the intercaste village community, and is very strong and evident at the time of voting. when the political decisions are made in common neighbourhood—hukka hupple bubble groups.

Transformation of old nucleated settlement into nucleated-cum-dispersed one

The regional traditional pattern of village settlement here is nucleated. But there has been a constant and rapid rise of population, particularly in the last hundred years, which has swallowed up all the open spaces in the village and has forced a large number of petty agriculturists owning 1 to 4 highas of land to seek shelter in their fields and construct there small thatched huts. Out of 473 families in the village, about 100, i. e. roughly 23 p. c. families are living in dispersed houses, while the rest are contained in the nucleated area. It is the same story in the nearby villages.

Dr. M. N. Srinivas has referred to the defence factor in determining the nucleation and dispersal of village settlement. It might have held good in the past and Coorg,⁵ but in this region it has no significance, for the villagers who are migrating to the farms, are poor and have nothing to fear from thieves and dacoits.

The ever increasing pressure of population and the non-availability of land inside the village are decisive in shaping the settlement pattern. It can be safely said about this region that dispersal is the trend of future, which on the one hand, solves the problems of congestion, but on the other hand, creates problems of water supply and communication and intimate social participation which becomes difficult when living in isolated houses. It presents problem for children and women to find company to play or to gossip at leisure.

So far the settlers who have gone outside the village to live in the fields are all Barlas.

Caste housing settlements in the village

I will describe the housing settlements in descending order of the regional caste hierarchy.

Brahmins have three fallas—compounds, comprised of 5, 7 and 10 houses. Patels occupy three fallas of 5, 15 and 20 houses.

Baria houses are spread over in fifteen fallas, thirteen of which are connected with each other in the shape of a horse-shoe bordering the village, From among the other two fallas, one is on the outskirts and the other is sur-

rounded by Patel, Valand, Suthar and Rawal falias and contains 20 houses which appear as isolated packets. The thirteen falias house 3, 4, 5, 10, 10, 10, 10, 10, 15, 20, 25 families. Patanwadias passing for Rajputs have a separate falia of 7 houses at the entrance of the village.

Valand falia has 7 houses, flanked by Rawal and Bhangī falias on either sides.

Rawal falia of 6 houses is surrounded by Baria, Valand, Suthar and Bhangī houses on four sides and is situated on the main road.

Dhed settlement has 7 houses at the outskirts of the village. Dheds of the village were described as Christians by other villagers, but they prefer to call themselves Hindus.

There is one recent migrant Mochī family which has acquired a Baria house on mortgage and has been working as a Tailor.

Bhangī falia of 5 houses is situated at the approach road.

House types

A brief reference to the house types might be made. There are three main house types in this region that are also reflected in this village. They roughly coincide with the caste and economic status of the person, and the economic status runs parallel to the traditional divisions of high, middle and lower.

Patels and Brahmins of the village have the first type of houses. The chief feature of this house is. It is a long rectangle with three compartments. The front compartment is double storeyed; it has a verandah and is generally 8' wide, the next room is 12' wide and is used as living room and also as store room for grains; the next and the last room of the same size is used as kitchen and waterstand. Rich agriculturists usually have a floor above the verandah and the living room. This upper floor is mainly used for storing fodder and surplus grains. The roof of such house is generally of corrugated iron sheets, put on wooden purlins. At times these sheets are covered with earthen country-tiles or thatch to protect against heat. The very prosperous ones are now using RCC flat roof.

The middle caste-cum-class houses belonging to Barias, Patanwadias, Valand and Suthar, and Rawals and Dheds are constructed with bricks in mud with cement pointing outside and mud plaster inside. The poor, lower caste-cum-class houses owned by poor Patanwadias and Bhangis are with one verandah and room, single storeyed, are constructed entirely of mud with plaster outside, and inside with country tile roofs. The Baria houses of poor agriculturists situated in the field are just single room thatched huts.

With the exception of four-five modern houses, the ventilation in all types of houses is very rare with hardly a window or skylight anywhere.

Like the Gheers male quarters add spacious cattle compounds in the North India, here the cattle are housed in the verandah itself or just opposite it in

a thatched shed. It has to be remembered that almost all the families in the village, whether rich or poor, have at least one buffalo, whose milk is one of the important sources of the supplementary income of the poor.

Conservancy

Twenty five years ago, there was not a single privy attached to any house and all the village folk defecated in the nearby fields and urinated against the backwalls of their houses or falias. The first latrine of the bore-hole type was installed by a Gossain businessman in his house, followed by the other fourteen till today. The castewise ownership of such privies is as follows :

Brahmin 7, Patel 6, Gossain 1, Suthar 1.

There is one other bucket-type latrine attached to the Chaura-village rest house, which is not in use.

Water supply

Till two years ago majority of the villagers fetched water from the two wells, one meant for the clean and the other for the unclean untouchable castes.

Hand pumps

It is only thirty years ago that the first hand pump was installed in the village by a Brahmin in service at a ginning factory at the cost of Rs. 300/-. After a lapse of another 15 years in 1946 two more hand pumps were installed by two well-to-do Patel-Patidars, at a cost of Rs. 1,500/- each.

In the year 1957, the pukka village well was renovated with the help of a munificent donation of Rs. 10,000/- made by a local Brahmin businessman and a contribution of Rs. 9000/- by the villagers. An electric motor was installed and a storage tank with a capacity of 10,000 gallons was constructed and forty taps in two rows were installed, one row to be used for filling the water and the other one for washing the clothes. Another tap was put at a distance of about 25 yards to be used by the Dheds, Mochi and Bhangis.

Electrification

Kerosene hurricane lanterns or diyo-wick lamps are still the chief source of lighting. 1957 saw the entry of electricity in this village. Fifty houses have so far installed electric connections. The castewise distribution is as follows :

Brahmins 10, Patels 15, Barias 3, Suthars 2. The Chaura was the first public building to be electrified.

Social stratification and occupational mobility

Social classes and castes make for the social stratification of the community. Indian caste system is unique institution in the sense, that never before such a populous, widely spread and civilized society adopted and practised it so persistently. Srinivas has rightly pointed out "Caste is even today an institution of great strength" and as marriage and dining are forbidden with members of other castes, the members of a caste living in a village have many important

ties with their fellow-castes-men living in neighbouring villages". And it gives an impression that the caste solidarity thus engendered nullifies the unity of the Indian village community. But this is not wholly true.

No doubt, the coming of Britishers and with them the germs and goods of Industrial Revolution, the birth of job-hungry English educated class, network of roads and railways and the cheap printing press created conditions conducive to the establishment of caste associations with the help of modern techniques. Dr. Bailey's observation, that "when the village gets more closely integrated with the larger economy of the country, it becomes less of unity" need clarification.

While the village is integrated with the larger economy, it becomes more disintegrated through the decay of the **Jajmani** vertical ties, it is not consequently integrated with the larger economy of the country in an unplanned way. The resulting personality and social disorganisation, not only undermines the sense of communal unity, but also fails in generating a broader unity. This frustration, fuelled by rising aspirations further reinforced and made to appear within reach after the introduction of the adult franchise has been a potent factor in the strengthening of horizontal caste ties.

It is also true that the Indian village was never self-contained. At least in recorded history it had intimate links with other villages of the region, even outside it in the form of big migrations, pilgrimages and trade. The history of almost all the villages I know of in Charotar region supports my contention.

The concept of the 'dominant caste' deserves consideration in this context. However like the famous concept of 'Sanskritisation' given by Srinivas, this, too, is undergoing constant addition and alteration, to include every possible form of power.

Now the point that the dominant caste supports and maintains the total system, is too static and a thing of the idyllic past. The only one single factor that would shape a dominant caste now is its numerical strength in the village and/or the region. At least I know of untouchables being dominant in some villages of Saharanpur district of U. P. and there may be some other examples in other States which are yet unreported. It is also true, that the dominant caste till recently has been too closely linked with the major ownership in land. Other components of the 'dominant caste' are rather too facile.

The Patels are the dominant caste in Charotar region even today. It is because they still own the major portion of the land, and is a solid block of 33 p. c. of the total population; they also have the monopoly of education. This explains their persistent dominance. But now the Baria caste which is equally numerous, though poor, has thrown a challenge. It is in a defiant mood and whenever safely possible they defy. Thus the dreadful dominant caste is becoming too diluted and fluid. This dynamic aspect has to be borne in mind.

The traditional caste hierarchy of the village

The traditional hierarchy in Morad is typical of the Charotar region. We are presenting it in descending order along with the numerical strength of the various castes enjoy in this village.

Caste	No. of households
Brahmin	20
Gossain	1
Patel	40
Baria (Parmar)	400
Patanwadia	7
Suthar	1
Valand	5
Rawal	6
Mochi (Chamar)	1
Dhed (Vankar)	7
Bhangi	5

Jajmani system

We come across the Jajmani system of functional relationships responsible for the vertical ties that unite the members of different caste groups in one functional whole, in a very attenuated form as compared to the North and other parts of the country. It is gathered that the Jajmani functionaries have been rather too few in this region. Two decades ago they had six functionaries, only four from inside the village and two Dhobi and Kumbhar from the neighbouring village.

The Brahmin priest attached to the Jajmani is called **Gaura** while the remaining are addressed as Basvayun—those allowed to settle. The present position is like this.

The **Gaur** who performs religious ritual functions is either paid in grains or in cash on a-la-carte basis. The earlier fixed payment in kind at the time of harvest on the basis of ploughs owned, is given up.

The Valand—Barber gets 30 lbs. per capita per year at the time of harvest. The Suthar—Carpenter, gets 6 lbs. per plough for regular repairs of implements.

The Kumbhar—Potter, the Rawal—Drummer, the Dhobi—Washerman, and the Bhangi—Sweeper, are performing their services in cash, and all the agriculturists engage them. Thus it is only the priest, the barber and the carpenter that are still the part and parcel of the Jajmani complex, embracing a minority of the working population. Hence the weakness of the much-made vertical ties.

Occupational mobility

The occupational structure of the caste has crumbled. Out of the eleven castes in the village, it is only the Valand, the Suthar and the Bhangis who are still sticking to the caste occupations, since they perform some still india-

pensable essential services, and their population in the village is too small. But they too, particularly the Bhangis and the Valands have to supplement their income with some agriculture and field labour to make two ends meet. There are about 25 p. c. landless people in the Baria agricultural community. There are six shopkeepers in the village, of whom two are Patels and four are Barias. One Brahmin is engaged in the service of a local Brahmin tobacco factory owner, the rest follow agriculture. All the other castes are also engaged in Agriculture. The caste occupations are losing their sanction and glamour. Every one from the lowest to the highest aspires to be either a big agriculturist, or a rich trader or wishes to secure a sinecure service.

Marriage and family

Village exogamy and village hypergamy is the rule. The Patels and the Brahmins can marry in seven villages, excluding their own, the Barias and Bhangis in sixty. The area of kinship coincides with the jurisdiction of the caste panchayat.

It is clear that the kinship area has specially widened the range of intimate ties. Another striking fact is that lower the caste the wider its area of kinship, almost coextensive with the Charotar region. It follows that there is a greater communication among them.

Now the sudden rise in formal education and aspirations of the high caste boys and girls has posed a problem, as to how to contain and content their choice in six sanctioned villages. A graduate girl of the village fails to find a suitable groom in them, and then, her guardians are forced to explore wider area, sometimes even crossing the Charotar territory.

The age of marriage has gone up by at least seven or eight years in one generation. Twenty years now is not considered an advanced age for high caste girls to marry. Educated and well-placed boys can be favourably considered up to twenty five and above. Seventeen or eighteen for girls, twenty or twentyone for boys is becoming the normal age of marriage even in illiterate sections.

The plight of the middle and lower castes worsened for one other reason. Except among the high caste Brahmins and the Patels, all other local castes have to provide for bride price, which is difficult to accumulate these days. I have met many a Baria young men, working and hoarding hard and pining for marriage as soon as their bride price is ready. The ever-increasing dowry, whose index number is closely following the rising prices, is worrying the parents of the educated daughters of the Patels and the Brahmins. Good boys are hard to get; educated girls are hard to be tied to less educated and less handsome nincompoops. They now even veto the proposals approved by the parents. The high caste prosperous parent is forced to send his daughters to the school and some times even to the College, and later he repents that he did

it. His illiterate daughter no suitable boy would accept; his highly educated daughter will not find a suitable match within financial limits. The tussle and tension is going on and has adversely affected child-parent relationship, which is becoming far from cordial and terser day by day.

Communication of new ideas

The ever increasing contacts with the outside world in the wake of trade, litigation and migration for employment or higher education, establishment of libraries, schools and colleges in the vicinity, entry of newspapers and itinerant politicians, the expansion of rapid and cheap means of transport etc. have connected the village, not only physically but also mentally, with wider currents of ideas, which are not traditional, but are modern, individualistic, competitive and egalitarian.

The widening area of exchange of goods and services

Trade and service has pushed villagers far and wide under pressure of economic stress or the spirit of adventure and ambition of making a fortune and getting rich quick. Charotar Patels have been pioneer Indian settlers in African territories of Kenya, Tanganyika, Rodesia and Zanzibar islands, and have virtually controlled their trade and commerce.

Village Karamsad, three miles away from Morad owes its fabulous wealth and big mansions to African profits. The present Sarpanch of Morad went to Africa 30 years ago in the service of his relative from Karamsad, worked for 10 years with him and then established independent grocery and general merchandise business in Nairobi. He returned to Morad in 1948 with much wealth. His elder son is still there and manages the business. His younger son a commerce graduate is doing tobacco business in Madras. Another Brahmin established flourishing money-lending business in Madras and made a fortune. He has recently discontinued his business for these people have incurred the wrath of the Madrasis now. Another Brahmin has a flourishing tobacco processing factory in the village and has a sales depot in Calcutta. These three traders have brought surplus wealth to the village. The third business man has been making munificent donations to public works in the village.

The search for service has pushed the Dhed-Vankar-Weaver caste young men to the railways at Baroda, Ahmedabad and Kotah, to ginning mills at Petlad and the Baria young-men to the rubber factory at Vallabh Vidyanagar.

Ritual region of the pilgrimage

Even when the means of transport and communication were simple, the Teerthas—pilgrim centres lured the villagers. It was always the last wish of every Hindu to visit the Char-dhams and other sacred spots to get merit and happiness in this and the next world. A few old people, even with their meagre resources, managed to visit far off religious centres like Hardwar, Prayag, and Kashi and braved much suffering at times running into bankruptcy. However, one who could not afford visiting these teerthas satisfied himself with Vetal, Kadra, Agas, Dwarka and Somnath in Gujarat. These pilgrimages were

another source of powerful communication and cross-fertilisation of ideas and informal means of mass education and recreation.

Political life, leadership and factions

It is remarkable that village Morad has not a single political party formally operating in it till today. Even the ubiquitous Congress, which returned its candidate in the last general elections from this region, has not a single four anna member in the village. The rival political parties struggling for power make their appearance or debut a few months before the elections.

In the last general elections of 1957 there was a straight contest between the Congress and the newly formed Maha-Gujarat Janata Parishad, agitating for separate linguistic state. The Congress candidate was a Desai and of the Janata Parishad was a Baria. The Baria majority of the village voted en block for their caste candidate, and rest of the village went with Congress. Thus an overwhelming majority of the village voted the former.

In 1951, only two parties were in the field, the Congress with a young energetic Patel from village Bandhani 5 miles away, former President of the Gujarat Youth Congress and the Swatantra Party with a retired Baria Engineer. Both the Candidates have so far once visited the village and thrown feelers and are establishing contacts. The Baria candidate naturally expected and received full support of the Barias. Incidentally he enjoyed the support of the Kshatriya Sabha-his caste association. But he had to try for some non-Baria votes also. For this he brought a Patel with him, who was related to the famous Sardar Patel. The Patel candidate relied on the support of the Patels and the Brahmins and the non-Baria lower castes.

The political decisions in Morad are not made on political lines. Actually there is little understanding of the political or ideological issues involved. At times, local and topical issues impinge on it. For instance, in December 1961, the state transport authorities at Anand informed the village Sarpanch that they were closing the village bus service for want of traffic. Immediately the village Panchayat was summoned, and a resolution was passed that if the decision is not rescinded, Satyagraha should be reported to restore the bus service, which for them was the only easy transport for visiting Anand and Petlad to transact business and attending the courts. Not only this, it was unanimously resolved that they would not vote for the Congress unless this wrong was rectified. The poor Patel candidate was on his toes.

Patels are still prominent in leadership and are considered inherently fit for it. There are, of course, mild factions in all the castes that have, say more than ten households. But their alignments change in relation to other castes, and the Patels unite singly or in league with the Brahmins, when they have to face the threatening Barias, who are in numerical majority, but not yet so ambitious. They are still very poor and illiterate, and cannot aspire for, or

devote much time to politics. But in future, they present a real threat to the Patel-Brahmin leadership.

The present leadership must placate the Baria majority to make itself felt and effective. Barias are still somewhat indifferent, and suffer from a feeling of inferiority and lack of boldness to snatch the village leadership. There is a feeling of complicity mixed with defeatism, that though they are in a preponderant majority, still they cannot rule the village. They feel that the dominant Patels aligned with the Brahmins by their shrewdness and chicanery have relegated them to inferior economic, educational and political status.

The qualities prized in a leader are : his intimate knowledge of village affairs, contacts and connections with the outlying villages, long experience in participating at caste panchayats, ability of discussing and deciding of disputes and claims, subcaste, village or intervillage problems, intimate contacts with and consideration from the influential outsiders, such as police, revenue and development officials, talukas and district politicians, particularly sitting MLAs and advanced age, fluent expression, and finally a reputation for being just, fair and generous. However, the actual selection of village-leader is always vitiated by caste-considerations, but in caste leadership they are respected.

Prime-movers of social change in Morad

I will conclude this paper by indicating the three most important factors which have been rather decisive in changing the village scene in this region in the past two decades. They are :

Occupation : 1. Buffalo animal husbandry, which is an ancient of the Charotar Gurjars, who migrated to this region in A. D. 400-500, and who dominate it now under the name of Patels and who gave their name to Gujarat. Now the buffalo husbandry provides subsistence and supplementary income to the poor landless, or very petty agriculturists. The Kaira Cooperative Milk Society has its unit in this village. Almost all the milk in the village is daily collected by the Society's lorry and taken to Amul Dairy at Anand. Immediate cash payment is made and the prices and purchases are assured throughout the year.

A buffalo on an average, yields an income of Rs. 30 p. m. Buffalo keeping has become a popular and supplementary occupation, with most of the middle and low income villagers, and has provided some relief from the lack of land and employment. Though all the population in this village is Hindu, it is difficult to find even a single cow for worship. It does not pay to feed a cow. Hence no need.

2. The African and interstate trade and commerce carried on by the Patels and the Brahmins of the village is another important factor in increasing the wealth of these sections, and indirectly of village also; and in changing social

attitudes and importing many consumer goods and fashions. A trader is always the chief ideal of the villager here.

3. The last important prime-mover of change in this village and this region has been complete shift in the crop pattern of this rich agricultural tract. Tobacco cultivation in this region started here round about 1937, on a moderate scale. The outbreak of the second World War gave it the needed impetus. Today it is a prized cash crop, which has virtually ousted the sowing of cereals and grains. The tobacco tycoons, and the Africawalas who are in most cases one and the same, rule the village, dominate rural affairs and set the new rural code of conduct.

A STUDY OF AGRICULTURAL ECONOMY OF THE BHIL TRIBE AT KHEDBRAHMA

Syt. Indubhai Raval, Ahmedabad

Constitutional Provisions

For a long time problems of Scheduled Tribes of our country were awaiting solutions. Gandhiji and Thakkarbapa initiated the programmes for the upliftment of the Adivasis, and after Independence our National Government have taken up the responsibility of the welfare of the tribal people. Sub-columns (1) and (2) of the Article 339 of the Constitution of India (1950) clearly state that the administration of the tribal areas and welfare of the tribes will be controlled by Central Government and besides this, Central Government will guide State Governments in planning welfare programmes and in their implementations. And there is also special provision in Section 275 of the Constitution for special financial assistance for the social and economic development of the scheduled tribes.

Development Project

Thus a special multipurpose development project—an ambitious five year scheme, with the total budget of Rupees 27 lakhs was started on Second November 1956, for the development of the Adivasis of Poshina Patta in Khed-Brahma Taluka of Gujarat—India. This project covers 99 villages with the area of 205 square miles. Out of the total population of 28, 528, in the project area 25,300 (96 12 p. c.) are Adivasis. They are all Bhils.

It was essential to know as to how was the process of development during the first three years of the project period and what was the impact of the development programmes on the Socio-economic life of the tribal people. Such an evaluative study could throw light on the special problems of the people and also could provide facts and figures to help in the future planning of the development programmes for the welfare of the tribal people.

Socio-Economic Survey

Therefore, on the invitation of the Khed-Brahma special multipurpose tribal community development project, a Socio-economic Survey was conducted by me in November, 1959 with the help of 45 undergraduate students of Shri Mahadev Desai College of Applied Social Sciences, Gujarat Vidyapith. The investigators were trained in methodology of Social Research and Field survey.

The survey was based on systematic sampling. Number of surveyed households was 459 (7.9 p. c.) from 25(25.7 p. c.) villages. Shri P. G. Shah of Gujarat Research Society, Bombay selected the samples of 0.4 and 0.5 p. c. respectively for the survey of Dublas and Naika-Naikadas of Gujarat. Prof. Malkani in his socio-economic survey (1954-'55) of Baroda City, selected a sample of 9.7 per cent. Dr. Gadgil had a sample of 7 to 8 per cent of families for his 'Poona-A Socio-Economic Survey'.

Production

What efforts have been made by the Khed-Brahma Project for the betterment of the tribal people could be very well assessed by the results of increases in production and income, cooperative credit and market facilities. First of all, change in the crop pattern resulted in the increase of production. In 1956 not a single surveyed family was cultivating crops like Bajree, Vegetables, Groundnut and castor; and a few families on the border had taken up cotton cultivation. Now in 1958, 1.5, 40, 0.5 and 1.1 percent of the families cultivated the respective crops. During these two years number of maize and wheat growing families is not fluctuated, but the percentage of cotton growing families rose from 30 to 83 showing an increase of 53 p. c.

In table No. 4 figures of the area under some main crops and number of families cultivating these crops are given.

Table No. 4

Area Under Crop and Number of Families

Crop	1956-57		1958-59		Increase or Decrease in p. c.	Increase in No. of families in p. c.
	Area in Acre	Percentage	Area in Acre	Percentage		
Wheat	59.10	17.00	180.5	18.5	+ 1.5	nil
Maize	192.00	57.50	433.2	44.7	-12.8	nil
Paddy	9.20	2.7	26.00	2.7	00.00	+ 5
Cotton	40.30	12.2	252.20	25.9	+ 13.7	+ 53

These figures show 1.5 p. c. increase in the area under wheat and 13.7 p. c. in the area under cotton. Area under paddy showed no increase. And the area under maize declined by 12.8 p. c. This is because of high increase in the area under cotton.

Per Acre Yield

There was not much seasonal climatic variation between the two years. 62.95 and 26.50 inches was the rain-fall in 1956 and 1958 respectively. 28" is the usual average rainfall in the area.

Table No. 5 reflects improvement in per acre yield of the various crops due to improved method of agriculture, increased facilities of irrigation, fertilizers and improved seeds.

Table No. 5

Increase in per Acre Yield

Commodity	1956 (Kaccha Pounds)	1958 (Kaccha Pounds)	Increase or Decrease in p. c.
Wheat	280	392	+ 13.1
Rice	174	340	+ 95.4
Maize	340	656	+ 92.9
Kodra	280	520	+ 85.7
Banti	320	495	+ 54.6
Sesamum	240	280	+ 1.4
Cotton	69	240	+ 246.9
Gram	455	320	- 29.6

280 lbs. of wheat was the per acre yield in 1956 which yielded 392 lbs. in 1958 with an increase of 13.1 p. c. Per acre yield of rice, maize, kodra and banti also increased by 95.4, 92.9, 85.7 and 54.6 p. c. respectively. Out of all crops, cotton recorded the highest increase in per acre yield i. e. 246.9 p. c. In cultivation of Co₂ cotton Sabarkantha district tops in the whole of India. It should be also noted that the per acre yield of gram declined by 29.6 p. c. because of increased cotton and wheat cultivation.

Increase in Overall Production :

There is also increase in overall agricultural production. In table No. 6 figures of production of 106 families are presented.

Table No. 6

Increase in Agricultural Production

Commodity	1956 (in Kachha Mds.)	1958	Increase in p. c.
Food Growing	4,533.00	6,626.20	+ 17.7
Wheat	607.00	618.00	+ 1.8
Maize	3,294.00	4,714.20	+ 43.1
Paddy	222.00	253.00	+ 13.9
Gram	410.00	481.00	+ 17.3

Sisamum	225.00	239.00	+	6.2
Cotton	287.00	511.20	+	78.2
Total	5,045.00	6,817.00	+	36.3

The table shows 36.3 p. c. increase in agricultural production in 1958 than that of 1956. It is estimated that the agricultural production in India is increased by 14 p. c. at the end of Second Five Year Plan, and 30 p. c. at the end of the Third Plan. Whereas in the project area it increased by 36.3 p. c. in two year period.

According to the analyses wheat showed only 1.8 p. c. increase and sesamum 6.2 p. c. But maize, gram and paddy showed comparatively high increase of 43.1, 17.3 and 13.9 p. c. respectively. And production of cotton tops the highest increase of 78.2 p. c.

In table No. 7 figures of dairy produce, in 1956 and 1958, of 106 surveyed families are given.

Table No. 7

Production : Dairy Product

Commodity	1956 Kachha Mds. lbs.	1958 Mds. lbs.	Increase in p. c.
Ghee	23.31	28.15	19.2
Milk	162.30	355.10	118.0
Eggs	1,110.00	4,877.00	339.00

(In Numbers)

The table shows the increases of 19.2 and 118 p. c. in the production of ghee and milk respectively and 339 p. c. increase in the number of eggs.

But it must be noted that though tribal people kept cattle in large number, increase in the dairy produce did not contribute much to the total production. Figures presented in table No. 8 makes this clear.

Table No. 8

Dairy & Agri. produce
PRODUCTION

Commodity	1956		1958		Increase in percentage
	Mds. lbs.	Percentage	Mds. lbs.	Percentage	
Dairy produce	186.11	3.2	1614.37	4.8	+ 1.6
Ghee	23.21	0.3	115.39	0.3	nil
Milk	162.30	2.9	1498.38	4.5	+ 1.6
Agriculture	5392.25	96.8	31812.00	95.2	- 1.6
Total	5578.36	100.0	33426.37	100.0	nil

The table shows that in 1956 dairy and agriculture produce contributed 3.2 and 96.8 p. c. respectively to the total production. In it contribution of ghee and milk was 0.3 and 2.9 p. c. respectively. In dairy production contributed

4.8 p. c. to the total production, showing an increase of 1.6 p. c. than that of 1956. Of course, that too is not very high.

Caution For Cash Crop

Adivasis of Poshina Patta have increased their agricultural production, in which production of cotton has recorded the highest increase of 78.2 p. c. and land brought under cotton cultivation has shown the highest increase of 13.7 p. c. in 1958. And the production data of 106 surveyed families have revealed that out of the total production of 6,817 Mds. valued at Rs. 52,386, cotton production contributed to it by 6.5 p. c., but it realised 19.6 p. c. of the total value. That is, people earn more from cash crop than that of food crop. Hence the tribal people are much motivated to cultivate cotton crop. This has laid to bring more land under cash crop and reduced food crop cultivation. This is revealed in table No. 9.

Table No. 9
Increase in the Area Under Cash-crop

Name	Area in Percentage		Increase or Decrease
	1956	1958	
Khed-Brahma Project	Food Crops 81.9	71.7	-10.2
	Cash Crops 18.1	28.3	+ 10.2
India	1956	1958	
	Food Crops 84.0	84.1	+ 0.1
	Cash Crops 16.0	15.9	-0.1

The table shows that during the two year period, area under cash crops is increased by 10.2 p. c. reducing the area under food crop. And compared to all India figures, tribal people have brought more land under cash crop.

Cash-crops bring more money to the cultivators and in a region where soil and climate conditions are suitable, cash-crop cultivation is more economic. But in the area like Poshina Patta where wheat, rice etc. food crops are suitable and when we deficit in food production, the project authorities should be cautious enough in encouraging cash-crop cultivation indiscriminately.

There is another danger in too much encouraging tribal people for cash crop cultivation. It is noticed in the primitive tribes, by wellknown Anthropologist Dr. Margaret Mead, that 'among many groups the introduction of cash crops has resulted in lowered nutrition, since farmers are tempted to put their best efforts into the cash crop or to sell the best'.^x

Income :

Annual income of the surveyed 459 families comes to Rs. 3, 21,499/- in 1958 and its details are given in table No. 10.

^xMead, Margaret; Cultural Patterns and Technical change (1955), p. 191

Table No. 10
Total Annual Income of 459 Families, 1958

Sources Income	Income in Rupees	Percentage
Agriculture :	2,79 930.90	87 0
Ag. Production :	2,78,120.90	86.5
Ag. Labour :	1,810.00	0.5
Animal Husbandry :	28,342.10	8.9
Production (Ghee, Milk. Eggs) :	27,199.10	8.5
Live stock sale :	1,143.00	0.4
Miscellaneous :	13,226.00	4.1
Forest Production .	1,256 00	0 4
Forest Labour :	4,964.00	1.6
Other services :	7,016.00	2.1
Total	3,21,499.00	100 00

The table No. 10 shows that the contribution of agriculture, animal husbandry and miscellaneous sources of income including forest production, forest labour and other services comes to 87 0, 8.9 and 4 p. c. respectively. This is the percentage of gross-income inclusive of cost of production.

Proportionate contribution of the income from animal husbandry and miscellaneous sources of income to the total is very poor in comparison with that of agriculture. Agricultural production contributes 86.5 p. c. of the total income and agriculture labour only 0.5 p. c. Out of 8 9 p. c. of the income from the animal husbandry, 8.5 and 0.4 p. c. are the respective contribution from ghee, milk and eggs and from the sale of live stock. In the miscellaneous income of 4 1 p. c., forest produce contributes only 0.4 p. c., and 1.6 and 2.1 p.c. income is from forest labour and other services.

This represents rather a sad picture of the fate of tribal people. The project area has 60 p. c. of the area under forest and 21 p. c. of the area under agriculture. And yet 87.0 p. c. of the income is contributed by the agriculture and only 2.0 p. c. of the total income is realised from the forest. This is because the forest are still under the private ownership of the Jagirdars, and Contractors have destroyed the forest ruthlessly.

Their under-nourished live-stock, though it being improved, does not contribute much income and also there is lack of full employment opportunities.

Income Per-Family Per-Capita :

The average annual income per family of the surveyed families comes to Rs. 700.4, and Rs. 111.6 is their per-capita annual income in 1955. The table No. 11 represents the distribution of the families into various income groups.

Table No. 11

Distribution of the Surveyed Families into Income Groups

Income Groups (Rupees)	Number of Families	1958 per-centage P.C.	1958 per-centage P.C.	1957 per-centage P. C.	+ or-(P. C.) Compared to 1957
50-100	10	2.2	13.1	27.5	-14.4
101-300	50	10.9			
301-600	115	25.0	61.9	51.2	-26.2
601-1200	154	33.6			
1201-1800	70	15.2			
1801-6000	60	13.1			
(Total)	459	100.0	100 0	100.0	

The analysis of the table No. 11 makes it clear that the majority of the families - (61.9 p. c.) save the mean income of Rs. 700/. 38.1 p. c. of the families have their income below the average, in which 25 p. c. of the families fall in the income group of Rs. 101-300. Only 2.2 p. c. of the families fall in the income group of Rs. 50-100/-.

This income distribution could be compared with that of a sample survey carried out in the area by the author in 1958. It shows that 40.6 p. c. of the families have gone up beyond the income level of Rs. 600/- in 1958, than that of 1957. That is 14.4 p. c. families from the income level of Rs. 50-300/- and 26.2 p. c. families from the income level of Rs. 300-600/- have gone up in the levels of living.

The two facts revealed from the above analysis of the income groups are 1. economic prosperity is reaching to the vast majority of the families of the project area, and 2. families under the lower income groups are ascending to the upper groups at a faster rate.

132 p. c. Rice in the Per-Capita Income

The per-capita annual income in the second year (1958) of the development project was Rs. 10.16, which showed an increase of 130.9% than that of the per-capita annual income of Rs. 44/- in 1954. Thus there is tremendous increase in the income of the tribal people because of the development programmes.

Tribal People Still 37 Years Backward

But still tribal people of the area are 37 years backward compared to the common man of India. The per-capita annual income of Rs. 101.6 of the tribal people in 1958 corresponds to the per-capita annual income of Rs. 106/- of India, 1921. That is, the per-capita annual income of the tribal people is still at a level at which the per-capita income of an average Indian stood 37 years back.

In comparison with the per-capita annual income of Rs. 260.8 of India, 1955-56 the per-capita annual income of the tribal people in 1958 is $2\frac{1}{2}$ times lower. If they are to reach the average income level of the citizen of India at the end of the Third Plan, their income should be increased by sevenfold, and along with that there should be check on the rise of prices.

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Sociology Section

**THE CULTIC ASPECT OF THE HOUSE AMONG
THE BHILALAS**

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The Bhilalas in eastern Gujarat and western Madhya Pradesh are one of the so-called scheduled tribes (Adivasi : 'the first inhabitants'), and are linguistically and culturally related to the great Bhil tribe. Like the Bhil they have their origin in the pre-Aryan populations of India, but to-day they speak a variety of Indo-Aryan Gujarati. They represent a relatively simple farming culture and show Hindu influence to a varying extent. In 1960/61 I carried out together with my assistant, Dr. E. Stiglmayr, field research among two Bhilala sub-tribes, namely, among the Rathwa in Chhota Udaipur Taluka (Baroda District, Gujarat), a group which had till then not been investigated, and among the insufficiently known Barela in the Satpura Hills in the Barwani area, Madhya Pradesh (see Haekel-Stiglmayr, 1961).

The dwelling-house of the Bhilala has a "sacred centre", and beyond that other cultic-religious relations. Special interest attaches in various respects to the holy centre of the house, and also in regard to the question, to what extent relations to Hinduism are present here. On the basis of our research-material the essential features of cultic side of the Bhilala house will be set forth in this article, and for the purpose of comparison some examples from other parts of Central India will be quoted. In the following the facts are described as we found them in two villages, Moti Sedhli (Rathwa) and Chikliya (Barela), on which we had concentrated. It is, however, presumable that the data acquired might also be valid for the remaining settlements of the two sub tribes.

The Bhilala have well-built, relatively roomy houses with gabled-roofs and of a complicated construction. The animal-stall is usually opposite the dwelling-house. The dwelling-house of the Rathwa-Bhilala has as a rule three (or four) rooms, of which the kitchen (gharma) situated at the back is separated from the front room (portal) by a wattle-and-daub wall. Special importance attaches to the kitchen in connection with our interests. The ridge-beam (nob) rests on some support-poles (tharon).

One of them is termed the central post of the house. However, it does not stand in the middle of the house, but marks the last third of the axis. It is, as we shall soon see, very significant that this post is in the kitchen, and indeed on the inner, longer wall approximately in the middle. The entrance of the house is more or less set towards the east and the house as well runs essentially from north to south on its longer side. These and the following statements refer to the house of our chief informant from Moti Sedhli, the Barwa (doctor, ritualist, shaman) Chihyo Kanasiya. Entry into the kitchen is not permitted to strangers. As we had won the confidence of the Barwa, however, we could step into this room and make our observations.

The sacredness of the 'middle pole' results from the fact that a female divine being is thought of as being connected with it. This notion acquires symbolic expression in a certain way. There are five points in red colour on the pole, and these are intended as symbol or sign (Hindi-chihn) of the Gotra Devi (Kul-Devi), the invisible tutelary goddess of the house or family as well as of an exogamous, patrilineal kinship-group scattered over several villages, whose members bear the same collective name (family name) like Kanasiya, Bamnia, Tarevli and so on. On another occasion we were told that these spots 'make' the Gotra Devi. 'Five', however, is generally a sacred number (also among the Hindus). It would be bad if one would make four spots only. Further explanations on the red spots, which we received from the barwa appear not quite clear. On the one hand, the coloured spots stand indeed for the tutelary goddess, but, on the other, they mean in the order mentioned earth, sun, moon, Devi Vahilakari (a goddess who creates the soul), and Bhagwan (the Supreme Being).

The devi of the kinship-group is thus in every house of the families belonging to such a unit. Every kul has its own Gotra Devi which was once a woman. She has no husband, is dispenser of prosperity and is invoked for help. That the middle pole of the chief posts of the house, which is connected with her, has its location in the kitchen, the domain of the wife, must have at any rate a deeper meaning. I shall come back later to this point. During the marriage celebrations prayers are directed to the Gotra Devi concerned both in the house of the bridegroom and that of the bride, and sacrifices of rice, sugar-cane molasses (gur) and oil (in lamps) are offered by the relatives of the bridal pair. When the bride is led to the house of her future husband, she prays there with a veiled face to the Gotra Devi symbol for health and welfare in marriage. During the annual feasts-Dewasa, Diwali and Holi-the names of th

dead members of the house are recited before the central post, and rice, chicken, goat meat and other offerings are placed before the Gotra Devi spots. The dead must eat of it.

The ceremonies at the building of a new house are further of great interest. The barwa with his oracle board first goes through a ritual to inquire if the place considered for the house is favourable. After measuring the square the holes for the posts are dug. Before the middle pole is put in, the head of the family puts some rice as well as a certain sum of money in the hole and prays to Bhagwan for his blessings. The monetary contribution consists of a rupee and four annas. Why just this sum, is explained as follows : A rupee would be the normal contribution, hence the additional four annas mean 'more than the usual amount', that is, superabundance. This symbolism occurs also among the Hindus. Around the post which has now been set in the hole the head of the house binds a red thread at about the height of the eyes and inserts some leaves in between. The idea sought to be expressed thereby is that the middle pole must support the entire house. From an architectural stand point this is naturally not case. During this ceremony, too, a pray to Bhagwan follows.

At the time of our stay in Moti Sedhli the barwa Chiliyo had pulled down his house which he had till then occupied and had built it anew at a short distance away. As reason for this step we were told that a brahmin of the provintial town of Chhota Udaipur had advised the barwa to shift his house elsewhere as it lay in the shadow of a great mango tree, a fact which would have unfavourable cosequences like sickness. This time, apart from some rice, only an anna coin was placed in the hole for the central post, probably because it was only a matter of shifting the dwelling-place. The central pole was taken from the earlier house.

When the building of the house is in essentials complete, the house-wife builds the two horse-shoe-shaped fire-places out of clay in the corner at the back of the kitchen. Then follows the nocturnal consecration ceremony which is, however, conducted not by the head of the house but by a barwa. It is divided into various sections : 1. On the right fire-place the house-wife prepares food for the sacrificial meal consisting of rice, two chickens and a kind of bread from a species of beans (*uradi*; *Phaseolus radiatus*). 2. There after-the barwa recites a litany in which 'all' the gods are invoked. Bhagwan is named first, then follow Suriya (Sun), Chand (Moon), Pitoro, Ind (Indra) and so on. 3. At the back of the right fire-place the barwa applies five red-coloured points. 4. A part of the food is thrown into the fire as an offering to the god of fire—

Agni. 5. Thereupon the middle pole receives the Gotra Devi marks. 6. Portions of the food that was earlier prepared are placed before the post for the dead.

The ceremony concludes with a meal in which only the head of the house and members of the kinship-group can participate. At the consecration feast of his newly built house the barwa Chiliyo was naturally head of the house as well as master of ceremonies. He had the meal referred to with four members of the Kanasiya kin-group, that is, with three of his paternal parallel cousins (sons of his father's brothers) and with one of their sons. Moreover, the husband of female cousin on the maternal side (mother's sister's daughter) was also invited. He belongs to the Koljia king-group. The two wives of the barwa and his daughters were likewise present (his sons are all dead). From all this it follows plainly that the kitchen has the character in certain respects of a ritual place, in which the sacred post forms the main component.

The Barela Bhilala who lived at a fair distance from the Rathwa in a south-eastern direction on the other side of the Narbada in the Satpura Hills differ from them in many matters. In part they show also stronger Hindu influences. As has already been mentioned, we concentrated attention on the Barela Village Chikliya. It is a considerably extended village with scattered houses, about a tenth of whose inhabitants are today Catholics. It was founded some generations ago by Bhilalas who came from the neighbourhood of Rathwa. In point of time our stay in this village was very limited; we could nevertheless collect substantial information on the sacred side of the house.

It is significant that none of the supporting posts (tharon) of the ridge beam has been given the importance of a sacred central pole. However, a staff, which is inserted in the floor near the fire-place in the kitchen and indeed on the inner wall which separates the kitchen from the living room in front, is considered the cultic centre of the house. The term for this staff is Ginjri. Moreover, one speaks of a Kul-Devi or Jat-Devi in connection with it. In the hole in which one inserts the stick, Joar-millet (sorghum), but no money, is placed. Prayers have allegedly not to be said during this activity. Sometimes a post already present at the place concerned represents the Ginjri.

Judging from the designation Kul (Jat)-Devi, the staff appears to be a symbol of a female deity, but full clarity could not be obtained about it. Once we were informed that Ginjri is something like an aneestrees; on the other hand there is uncertainty in this regard. In an inter-

view with the oldest man of the village and his two brothers it was noticeable that these elders felt a certain timidity in speaking about Ginjri. As we told them through the interpreter that their views would be of great interest to us, and as they seemingly gathered courage through the arrival of others of the village, they set beside their inhibitions and made certain statements to us. Thus, Ginjri is not a goddess (devi). Perhaps this statement referred to the staff in itself, for the people speak otherwise of a Kul-Devi. Furthermore, we learnt that Ginjri is the same as Kuli, that is, the exgamous kinship-group, whose members bear the same collective name. Every one of these groups has its own Kul-Devi or Ginjri. This would thus be to a certain extent the symbol of the kinship-group in its totality. One does not know if the female being is in the staff. Other informants again said that Ginjri was a memorial-symbol for all the dead members of the house.

Ginjri helps those who live in the house or members of the family in all affairs. If, for instance, somebody falls sick, the barwa sacrifices chickens in front of the stick in the kitchen. He prays there also to the gods, so that the souls of the dead may not be able to do harm. Otherwise, food-offerings to the dead are made at the Ginjri by the head of the family, and to be sure at the annual feasts—Nowain (harvest feast), Diwali and Holi. The offerings consist of cooked rice, joar-millet, maize, melted butter (ghee), molasses, coconut, liquor and other things. A part of this thrown on the roof, and thereafter greater portions are placed in leaves on the lower edge of the roof. If one neglects this sacrifice, the dead will send an evil spirit.

It must be noted that not every dwelling-house has a Ginjri-staff. This was, for example, the case with a family which consisted of a married couple and their two sons and seven daughters. The Ginjri of this family was in the house of the married man's father, a fact which was explained as follows: So long as the father lives, the sons cannot set up their own Ginjri in their own houses, even if they themselves are already fathers of families. This staff belongs to the house of the living head of the familial patriline, which can comprise three or four generations. But what happens to the Ginjri if the head of the family dies? Direct statements on this point have not been obtained by us; it is, however, presumable that the son who remains in the house take over the paternal Ginjri.

At the marriage celebrations the bride is brought to the Ginjri of the bridegroom. From now on she belongs to the Ginjri of the husband, and so also to his kuli. That gives her the right to prepare the festive

meals which are connected with sacrifices to the Ginjri or the dead. The preparation of such food can only be undertaken by a married woman. Sisters in the house of their brothers cannot undertake this task. If they are already married they belong to a Ginjri foreign to the family; if they are still unmarried, their marriage is taken potentially into consideration. We have unfortunately not made any inquiries about which wife cooks the sacrificial food, when the father of the family has become a widower. If the marriage was monogamous, the only possibility would be for the wife of one of his brothers to discharge the duty, as they belong to the same Ginjri.

In his field-research among the Jhabua-Bhil 1938/39, W. Koppers also visited the Barwani area and the village Chikliya. About the Kul-Devi he has following note (1948, p. 279) : Among the 'small Bhilala' of the Barwani area "every house has its house-goddess, the Kul-Devi (or Jat-Devi) In the form of a simple piece of task-wood which is set in the floor, it has its place in the neighbourhood of the fire-place. In affliction and need they turn in general to the Kul-Devi. To a certain extent she plays the role of the house doctor and is helper in need in the cares of daily existence."

In regard to the cultic aspect of the house among the Bhilala in Chikliya we obtained the following further information : At the construction of a house one binds threads with mango leaves to the ridge-beam (boliya). That implies the hope that the house will be protected by Bhagwan. Allegedly, a consecration ceremony or consecration of the fire-place does not take place. And yet the professional singer (gain) who was once also a barwa, informed us that the barwa painted schematized human figures in red colour on the horse-shoe-shaped clay hearth. These human figures obtain the names of various deities. If this occurs in connection with the construction of the house, was not communicated to us.

In order to evaluate the above material from a wider perspective, it would be necessary not only to make comparisons with the relevant facts of present India, but also to draw out the relevant statements in the written sources of the various epochs in India, in other words, in the Vedas, Brahmanas, the Upanishads, the Sutras, and the two epics, the Mahabharata and the Ramayana. In the framework of the present article I can obviously only limit myself to the selection of some examples relating to our subject from the ethnographic literature on Central India, and to some remarks bearing on problems involved.

In studying the cultures of tribal India, the ethnologist confronts a complex of difficult questions such as : What is autochthonous and pre-Aryan, what must be ascribed to the Vedic Aryans, Brahminism and Hinduism, to what extent present. Furthermore, anthropological information on large areas of India is still very incomplete, and the available reports are unequal in quality and in completeness. All this makes ethnological comparisons and interpretations very difficult.

Let us first consider the facts among the Bhil who are related to the Bhilala. It may be said at once that they differ in the type of their domicile from the Bhilala to such an extent that dwelling-place and animal-stall are found together in one house.

The northern neighbours of the Rathwa-Bhilala are the Bhil of the hilly tracts of Ratanmal. In Y. V. S. Nath's monograph on these Bhil, however, nothing is reported about the cultic aspect of the house. The emphasis of his field-research lay of course on an analysis of the social and economic structure. He states merely that the fire-place (chulo) symbolizes the house-community (Nath 1960, p. 111). The cult of the dead or of ancestors contributes essentially to the integration and solidarity of the narrower, patrilineal kinship-group (lineage), and yet it is apparently conducted exclusively in the sacred grove of the village in the name of the chief tutelary deity of the village, Baba Dev. The memorial-stones for the dead stand there also.

Things are otherwise among the Bhil in Rajpipla and West-Khandesh (Gujarat). At the construction of a house they first ascertain through an oracle if the place is favourable. Then follows the ritual setting-up of the middle ridge-beam support (dharon in West-Kandesh, khamb in Rajpipla). In the hole one puts a coin. At the top-end of the post red spots are painted, and in addition a rupee and four annas, a coconut, a betel-nut, a piece of red thread, and some bamboo leaves are fixed. After the posts of the longer sides were driven in (in uneven number), the other ridge-beam props were erected in the longer axis (Naik 1956, pp. 27f.). The two fire-places in the kitchen represent the centre of the house. When the bride is led into the home of her future husband, the fire-place is shown to her in a festive spirit. During the Diwali festival figures are painted on the fire place and the kitchen wall (Naik 1956, p. 30). The fire (agni) is regarded as sacred. It may be not defiled (Naik 1956, p. 33). Before a house is built, one sacrifices to the dead and venerates Ma Dharti or Mother Earth (Naik 1956, p. 185).

About the Jhabua-Bhil (Madhya Pradesh) W. Koppers (1948, p. 585)

reports : At the construction of a house one endeavours to see that it does not fall under the shadow of a fig-tree. Otherwise the aerial roots can harm the young people. For the setting up of the main pole a favourable day is chosen. The best days are the appearance of the new crescent-moon or the full moon. The main pole can be any of the poles which will stand at the front-side of the house (located towards the north or the east). At the place where the main post will be set, the head of the village pours some drops of daru for the Earth-Mother, Zami Mata. Next the hole is dug there, and one puts in it some water and a copper coin or a piece of silver wire. Then follows the insertion of the pole. The informants could not tell us why water was poured into the hole. The metal piece, however, stands for the earth which has opened its mouth. On the forked prongs of the main post a packet of yellow-coloured rice is hung. About this practice, too, no clear answer was available. In the fork one places further a branch of the Ber-tree (*Zizyphus jujuba*), in order to keep the owls away. A cord tied to the post is meant to prevent the witches from entering the house. After daru has been poured on to the main pole, the actual work of construction begins in perhaps eight to fourteen days. In the consecration of the new house, the head of the house sacrifices a he-goat or a cock (Koppers 1948, p. 64) The fire in the cooking-place is considered a goddess (agan devi) here. In contrast with the Hindus, the Munda and the Baiga, there is no sacred place in the Bhil house. "Perhaps it is, however, present in places! One must take this possibility into consideration." (Koppers 1948, p 66)

Among the caste Hindus in the neighbourhood or the town Dewas in Malwa (Madhya Pradesh) every one of the patrilineal kin-groups of clans (gotra) has a tutelary goddess, the Kul-Devi (kul an agnatic line or also a clan). She has actually another name or is named after the number of days in which she enjoys veneration in the context of the feast concerned. Sometimes it seems as though a difference is drawn between the clan goddess and a mother goddess (Mai Mata), and yet the people are not clear where exactly the difference lies. At any rate, it is said that both are 'goddesses of the house' (ghar) The Kul-Devi represents to some extent the entire gotra. Much more than the clan name she is a test of group membership. In theory all members of a gotra in the village must carry out the cult of their kul-mata in the house of the oldest man. In reality, however, either some men from different houses gather together for common worship in one house or, what occurs most frequently, every father of the family carries out the cult for himself in his own home. These house-cults are most exclusive. Non-members of the caste

or unqualified persons of the same sub-caste are not admitted (Mayer 1960, pp. 16, 186 ff.).

The celebration of the cult of the goddess takes place on one of the nine days before the Dasahra feast (September-October). There are differences in the way the cult is conducted among the particular castes. Sometimes an idol is present. It is placed on a platform of actually different kinds of wood and a turban or piece of red cloth is set on it. The mata can, however, be also symbolized by a mere drawing in outline on a plaque; or a pattern made by the strewing of flour is formed for her on the floor. The worship consists above all in the offering of food. The opinions on the extent to which the married man worships the kul-mata of his wife are divided. Many say that this is attended to by the bridegroom in the house of his bride. For the wife the main occasion for the worship of her husband's clan-goddess is shortly after the marriage. With a veiled face she bows low before the idol or drawing and touches the floor with her forehead. This act of worship gives the wife the proper status in the home of her husband. Afterwards she is free to carry on the worship annually or not (Mayer 1960, p. 185).

From the examples which have been quoted above for the purpose of comparison with the material from the Bhilala, very limited inferences can be naturally drawn. One fact, however, appears evident, and that is that in regard to our subject, the Bhilala occupy a certain special position in spite of many kinds of analogies to the Bhil and caste Hindus. I have the impression that this picture might not essentially change even if one draws upon more extensive comparative material from Central India. At any rate, one must take into consideration the fact that the ethnographic data which stand at our disposal are in no way complete. It would nevertheless be possible that new field research will produce other possibilities of interpretation. As is to be expected, the Bhilala show strong connections with the Bhil in some particulars. But distinct similarities also exist with the caste Hindus of the Dewas area. The association of a female deity with the house is fairly universal.

Special interest attaches to the fact that among the Bhilala and the Bhil certain components of the house construction are drawn into the ideological and cultic sphere. It appears that in this respect the Rathwa-Bhilala have preserved the basic conception better, namely, the connection of a ridge-beam prop with the tutelary goddess of the house and the kin-group as sacred middle-point of the house. Further, the invocation of the High God Bhagwan during the construction of the house is characteristic of the Bhilala.

The evaluation of the Ginjri-staff among the Barela in Chikliya constitutes a special problem. As was earlier mentioned, this Bhilala group left its former habitat in the neighbourhood of the Rathwa at a relatively recent point of time. And among these it is, however, the middle post to which the function of the Ginjri-staff of the Barela applies. For the present one can take up only some alternatives for discussion: 1 Are perhaps the same factors present among a part of the Rathwa as among the people of Chikliya in regard to the sacred centre of the house? 2. Have the Barela in their migration deviated from the cultic central post and made a substitute for it in the form of a stick? 3 Or, did the Barela deviating from the neighbouring Rathwa, already possess the staff as sacred centre of the house in their earlier home?

Let us recall to mind once again the plan of the Rathwa-house: Fundamentally speaking the kitchen with the part of the dwelling-place lying before it is the core of the house. The remaining rooms are mere additions. Considered from this point of view, the sacred ridge-beam prop would in fact be the middle pole in terms of its position. That raises the question if one might not see here indications of an older form of dwelling-house. It may be noted that the still uninvestigated Bhil in the secluded forest area of the Dangs in eastern Gujarat, who also still practise slash-and-burn cultivation, live in cone-roofed houses (according to P. G. Shah, Gujarat Research Society, Bombay; see also C. Furer-Haimendorf, in Nath 1960, p vi) It is just in such a house-form that the central post can be a technical factor in its construction. Future field-research among the Dangs-Bhil should dedicate corresponding attention to their house-form.

For the evaluation of the cultic side of the dwelling-house of the Bhilala, the Bhil and other populations of India there are very significant texts about the former house ceremonies in the old Indian ritual sources—the Atharvaveda and Grhyasutras. As a totality the Atharvaveda is doubtless younger than the R̥gveda. It, however, contains material which in part must be substantially older, and above all must have originated in the beliefs of the people. The Grhyasutras must also be dated later (approximately in the seventh century B. C.), but they likewise deal in part with very old rites and usages and have, moreover, also absorbed local customs (Gonda 1960, p 12f.)

In the Atharvaveda the following data occur as subject-matter (Viennot 1954, p 66ff) The goddess of the house is invoked in a hymn for prosperity, fertility and a long life, and indeed particularly at a house-post. She, the mighty queen may descend with the help of the

supporting-post, keeps enemies away, and permits one to live in good health for a '100 Autumns'. In the Grhyasutras instructions about house-building are given : In the choice of the site it is necessary to pay attention to the fact that certain trees show the right position to the cardinal points. After the holes for the four props are dug, the head of the house inserts a branch of the Udumbara tree (*Ficus glomerata*) smeared with melted butter in the hole in the direction of the east. In the hole for the central post (*madhyama sthuna* or *sthuna-rajā*) he puts a water-plant and pours in water together with barley and grains of rice. When the pole has sunk into the ground he recites : " O Pillar rich in horses and cows, let the melted butter drop. Set yourself up, make yourself firm in the earth, prosper, so that your life may be long in the midst of abundance." Further : " This navel of the world, I set it up, I build a strong house here." This invocation is repeated at the erection of the four corner-posts. The five main posts of the house are painted and carved. To each one the house attributes a particular quality : To the east pillar truth and faith, to the south pillar sacrifice and offering, to the west pillar power and ability, to the north pillar Brahmins and Kshatriyas, to the middle pillar law.

Thus the sacred number five appears with the main pillars of the house. In this regard it is to be noted that among the Hindus five stones which stand for the house idols (*pancayatana puja*) are found in every house in a special place. They symbolize the principal divinities - Vishnu, Shiva, Durga, Ganesha and Surya. Before them sacred texts are recited and incense, rice and flowers are offered. So also before the main meal one throws some of the food in the fire for all the gods (Gasenapp 1922, p. 330) It may be asked if the five red points of the Gotra-Devi symbol on the central post of the Rathwa house which, as we have already seen, stand for the deities Earth, Sun, Moon, Vahilakari Devi and Bhagwan, can be brought into some connection with the above mentioned conceptions.

At any rate there seems to be no doubt that the house cults of the Bhilala and the Bhil contain Hindu beliefs which in part reach back to the old Aryan times, a good example of cultural stability. If now among the Bhilala there are independent religious notions in ideology of the middle pole, of the tutelary goddess of the house as well as in other matters cannot at the moment be decided. The least that can be said is that the Vedic and Hindu beliefs have undergone a patterning of their own.

By way of conclusion I should like to suggest that in the measures of the Indian Government to raise the living standard of the tribes and

castes the cultic-religious aspect of the house must be correspondingly taken into consideration. As an official of the Chhota Udaipur District, who was entrusted with the preliminary work for the Census of 1961 in the Rathwa-Bhilala area told us the Government of the State of Gujrat is endeavouring to persuade the Bhilala and other adivasi to settle in compact villages of the Hindu type. In connection with this plan houses were also built for the people, and yet they were not prepared to move into these dwellings. This appears quite understandable if one holds before one's eyes narrow ideological and ritual connection of the family to its house. A house erected by the government had the necessary consecration, it does not have the sacred centre and the tutelary goddess. For the Bhilala the living house is to some extent a special world, in which he feels himself secure. And this world cannot be straightaway replaced by a well-meant programme of aid from the side of the government. The Catholic mission (Society of the Divine Word) in Barwani, to whose sphere of influence the Barela Village Chikliya belongs, has taken the attitude of the people to their dwelling-house into consideration. Thus, the Bhilala, who are already Catholics, have their sacred Ginjri-staff as before in the kitchen.

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ચોથી ગુજરાતના સંશોધન કાર્યકરોની પરિષદ

તા. ૨૦ મી ઓક્ટોબર, ૧૯૬૨

ગ્રામ-આયોજન વિભાગ

ગુજરાતમાં ગ્રામોદ્યોગોનું સ્થાન

શ્રી. વિમલ શાહ

“ગ્રામોદ્યોગો અને નાના ઉદ્યોગોએ પહેલી અને બીજી પંચવર્ષીય યોજનાઓ દરમ્યાન રોજગારી વધારવાનાં, ઉત્પાદન વધારવાનાં અને ન્યાયી વિતરણ હાંસલ કરવાનાં એનાં ધ્યેયો સિદ્ધ કરવામાં કિંમતી ફાળો આપ્યો છે. ત્રીજી યોજના દરમ્યાન આ જ ધ્યેયોની વિસ્તૃત ક્ષેત્રે સિદ્ધિઅર્થે એણે એનાથી પણ વધુ મહત્ત્વનો ભાગ ભજવવાનો રહેશે. ૧૯૫૬ માં પસાર કરવામાં આવેલા ઔદ્યોગિક નીતિના ઠરાવ મુજબ તથા બીજી યોજનામાં જણાવ્યા મુજબ આ ઉદ્યોગોના કાર્યક્રમોના મુખ્ય ઉદ્દેશો આ પ્રમાણે હતા : (૧) ઓછી મૂડીરાકાણે તાત્કાલિક અને કાયમી રોજગારી મોટા પ્રમાણમાં જોડી કરવી, (૨) વપરાશી માલ તેમજ સામાન્ય કક્ષાના ઉત્પાદક માલ માટેની વધારાની માગને પહોંચી વળવું, (૩) અન્યથા પૂરો ઉપયોગ ન થઈ શકત તેવી મૂડી અને કામગીરીનો પૂરો ઉપયોગ શક્ય બનાવવો, (૪) આ ઉદ્યોગોના વિકાસકાર્યક્રમનું એક બાબુથી સમગ્ર ગ્રામવિકાસની યોજનાઓ સાથે સંકલન કરવું તેમજ બીજી બાબુથી મોટા ઉદ્યોગોની યોજનાઓ સાથે સંકલન કરવું. આ કાર્યક્રમો દ્વારા રાષ્ટ્રીય આવકનું વધુ ન્યાયી વિતરણ પણ શક્ય બને છે અને બિનઆયોજિત રીતે થતા શહેરી-કરણુમાંથી જોલા થતા પ્રશ્નોને પણ ટાળી શકાય છે. કાર્યપદ્ધતિઓમાં અને સંગઠનમાં જરૂરી ફેરફારો કરવામાં આવે તો આ ઉદ્યોગો રોજગારીનો અને આવકની તકો આપ્યા દેશમાં પૂરી પાડતા વિકેન્દ્રિત અર્થતંત્રના એક કાર્યક્ષમ અને પ્રગતિશીલ અંગ તરીકે પોતાનું સ્થાન મેળવી શકે એમ છે. આ ક્ષેત્રમાં આથી આયોજનનું મહત્ત્વનું એક કાર્ય સુધરેલી કાર્યપદ્ધતિઓ દાખલ કરવામાં તથા કાર્યક્ષમ સંગઠન જોડું કરવામાં સદાયમૂત થવાનું છે. તેથી દેશના એકંદરે આર્થિક વિકાસને કારણે ઉપલબ્ધ થતી સગવડોનો પૂરો ઉપયોગ લઈ શકાય, અને જરૂરે દિવસે આ ઉદ્યોગો પોતાના જ પગ પર જોલા રહી શકે, સાથે સાથે કાર્યપદ્ધતિઓમાં કરવામાં આવતો આ ફેરફાર એ રીતે નિયંત્રિત કરવો કે જેને લોધે મોટા પ્રમાણમાં ખેડારી જોલી ન થાય અને લાખો લોકોને આફનની આંધમાં ધકેલી ન દેવાય.”

“ત્રીજી પંચવર્ષીય યોજના” પ્રકરણ ૨૫

(Third Five Year Plan, Chapter XXV)

ત્રીજી પંચવર્ષીય યોજનાના પ્રસ્તુતકર્તા ગ્રામોદ્યોગો અને નાના ઉદ્યોગોના સ્થાન વિશે ઉપરના શબ્દોમાં ઉલ્લેખ કરવામાં આવ્યો છે. સદ્ભાગ્યે આયોજનકારોના મનમાંથી ગ્રામોદ્યોગોનું આ દેશની અર્થવ્યવસ્થામાં શું સ્થાન હોઈ શકે એ વિશે અગાઉ રહેલી શંકાઓ દૂર થઈ છે અને એના નિશ્ચિત સ્થાન વિશે હવે ઝાઝો વિવાદ રહ્યો નથી. ગ્રામોદ્યોગોનું સ્વરૂપ કેવું હોવું જોઈએ, એમાં કયા પ્રકારની કાર્યપદ્ધતિઓ અપનાવવી જોઈએ, વીજળીનો ઉપયોગ કરવો જોઈએ કે નહિ, વગેરે પ્રશ્નો વિવાદભર્યા છે, અને હજી કેટલાક વખત માટે એ વિવાદભર્યા જ રહેશે. પરંતુ ગ્રામોદ્યોગો અને નાના પાયાના ઉદ્યોગો વિના આપણને ચાલશે જ નહિ એ વાતની તો લગભગ સૌને પ્રતીતિ થઈ ગઈ છે. આ પ્રતીતિ કરવામાં સંજોગોએ ઘણો મોટો ભાગ ભજવ્યો છે એ આપણે સ્વીકારવું પડશે. છેલ્લા દાયકામાં વાર્ષિક બે ટકાથી વધુ દરે થયેલી વસ્તીનો વધારો અને એ હકીકતમાંથી નીપજતાં અન્ય પરિણામોએ આપણી સમક્ષ પડેલા પિરાટ કાર્ય વિશે અને એની અટપટી સમસ્યાઓ વિશે આપણને વધુ જાગૃત કર્યા છે. દા ત પહેલી અને બીજી પંચવર્ષીય યોજનાઓને અંતે ૧૦ હજાર કરોડ રૂપિયાના મૂડીરોકાણ પછી પણ બેકારોની સંખ્યામાં થયેલો વધારો વસ્તીવધારાને કારણે જ હતો, પણ બેકારીની સમસ્યા તો એને લીધે વધારે ગૂંચવાઈ હતી. ત્રીજી પંચવર્ષીય યોજનામાં બીજા દશહજાર કરોડ રૂપિયાનું મૂડીરોકાણ થશે, પણ પેલી બેકારીની સમસ્યાઓ હજી બનવાને બદલે વધારે ઘેરી બનશે એવો જ ડર રહ્યા કરે છે. પહેલી પંચવર્ષીય યોજનાને અંતે બેકારોની સંખ્યા ૫૩ લાખ હતી, બીજી યોજનાને અંતે એ સંખ્યા ૮૦ લાખની થઈ હશે એવો આયોજન પચતો અદાજ છે, અને ત્રીજી યોજનાને અંતે ચાલુ વસ્તીવધારાને હિસાબે એ સંખ્યા ૧૨૦ લાખે પહોંચશે એટલી ગણતરી છે. વધતી જતી વસ્તીને કારણે ઘેરી બનતી બેકારીની સમસ્યાનો ઉકેલ ગ્રામોદ્યોગો અને નાના ઉદ્યોગોને રસ્તે જ આવી શકશે એ હવે વધુ ને વધુ સ્પષ્ટ થવા લાગ્યું છે.

છેલ્લા દાયકામાં આફ્રિકાના અને એશિયાના અનેક દેશોએ સ્વતંત્રતા મેળવી છે અને ભારતની માફક પોતાના આર્થિક વિકાસ માટેની યોજનાઓ ધરી આગળ વધવા માંડ્યું છે. પરિણામે પશ્ચિમી દેશોની માફક નિકાસ-બજારો મેળવી આપણી પ્રગતિની રફતાર વધારવાની શક્યતાઓ પણ હવે મર્યાદિત બની ગઈ છે. આપણો નિકાસ-વેપાર વધારવામાં આપણે ખાસ કાવ્યા નથી એ તો સુવિદિત છે. આ સંજોગોમાં જેટલી પરદેશી મૂડી મદદ તરીકે આપણને મળે છે તેના જોર પર જ આપણે આગળ વધીએ છીએ. પરદેશમાંથી લીધેલી મૂડી ક્યારેક પાછી વાળવાની છે એ ખ્યાલ આપણા મગજ પર સતત સવારી કરતા હોય છે. આ સંજોગોમાં ઓછી મૂડીના ઉદ્યોગો તરફ આપણું મન વળે એ સાવ સ્વાભાવિક છે.

ગુજરાતમાં ગાંધીજીની અસરને કારણે ગ્રામોદ્યોગો અને નાના ઉદ્યોગો તરફ રાજ્યકર્તાઓનું પહેલેથી જ ધ્યાન ખેંચાયું હતું. અગાઉનું મુખ્ય રાજ્ય જેમાં ગુજરાતનો સમાવેશ થતો હતો તેણે ૧૯૪૮ માં ખેરસાહેબના પ્રધાન મંડળ વખતે ગ્રામોદ્યોગ સમિતિની સ્થાપના કરી આ કામની જવાબદારી હાથમાં લીધી હતી એ જ રીતે ૧૯૫૦ માં સૌરાષ્ટ્ર સરકારે પણ ગ્રામોદ્યોગ સમિતિની સ્થાપના કરી આ જવાબદારી ઉપાડી હતી ૧૯૫૪ માં આ બંને સમિતિઓને વૈધાનિક સ્વરૂપ આપવામાં આવ્યું અને સને ૧૯૬૦ માં ગુજરાત રાજ્યની

સ્થાપના થતાં મુધી બંને પ્રદેશોમાં અલગ મંડળો કામ કરતાં રહ્યાં. ગુજરાત વિભાગમાં મુખ્ય રાજ્ય ગ્રામોદ્યોગ મંડળના ગુજરાત વિભાગે કામ કર્યું ન્યારે સૌરાષ્ટ્રમાં સૌરાષ્ટ્ર ખાદી ગ્રામોદ્યોગ મંડળે કામ કર્યું, ૧૯૬૦ માં અલગ ગુજરાત રાજ્યની સ્થાપના થયા પછી બંને મંડળોને એકત્ર કરી ગુજરાત રાજ્ય ખાદી ગ્રામોદ્યોગ મંડળની સ્થાપના કરવામાં આવી છે અને એ આખા રાજ્યમાં ખાદી અને ગ્રામોદ્યોગોના વિકાસની જવાબદારી સંભાળે છે. આ મંડળ પાસે ખાદી ઉપરાંત બીજા જે ગ્રામોદ્યોગોની જવાબદારી છે તે આ મુજબની છે: મધમાખીપાલન, ગ્રામ દિવાસળી ઉદ્યોગ, ગ્રામ કુંભારી ઉદ્યોગ, ગ્રામ સાથુ ઉદ્યોગ, ચર્મોદ્યોગ, તેલધાણી ઉદ્યોગ, હાથજીડ ઉદ્યોગ, હાથકાગળ ઉદ્યોગ, ગોળ અને ખાંડ ઉદ્યોગ, ગડગોળ ઉદ્યોગ, રેષા ઉદ્યોગ, લુહારી સુથારી ઉદ્યોગ, ગોબર ગેસ પ્લાન્ટ અને ચૂના ઉદ્યોગ.

આ ઉપરાંત રાજ્યના સહકારી ખાતાને પણ ગ્રામોદ્યોગોના વિકાસની ફેટલીક જવાબદારીઓ સોંપવામાં આવી છે. મિલસૂતરનો ઉપયોગ કરતા હાથવણાટ ઉદ્યોગના વિકાસની સંપૂર્ણ જવાબદારી આ ખાતા પાસે છે. એ ઉપરાંત જે ગ્રામોદ્યોગો કે ગૃહઉદ્યોગોના વિકાસની જવાબદારી ખાદી ગ્રામોદ્યોગ મંડળને સોંપવામાં નથી આવી તે સમજા આ ખાતાને સોંપવામાં આવ્યા છે; જેવા કે જુટ બનાવવાનો ઉદ્યોગ, વાસણ બનાવવાનો ઉદ્યોગ. રંગાઇ છપાઈ વગેરે વગેરે. ઉપરાંત ખાદીઉદ્યોગોના વિકાસની જવાબદારી પણ આ ખાતા પાસે છે; જેવા કે ચર્મોદ્યોગ, માટીકામ વગેરે.

નાના ઉદ્યોગોના વિકાસની જવાબદારી રાજ્યના ઉદ્યોગ ખાતાને સોંપવામાં આવી છે. ઉદ્યોગખાતું ભારત સરકારે રાજ્યમાં નાના ઉદ્યોગોના વિકાસ માટે સ્થાપેલી સેવાસંસ્થા (Small Industries Service Institute) સાથે સહકારમાં રહી કામ કરે છે એ ઉપરાંત નાના ઉદ્યોગોને કાચો માલ મેળવી આપવામાં મદદ કરવા તથા એના તૈયાર માલના વેચાણમાં મદદ કરવા એક નાના ઉદ્યોગો માટેના ડોપોરેશનની પણ હમણાં રચના કરવામાં આવી છે.

રાજ્યનું ખાદી ગ્રામોદ્યોગ મંડળ, રાજ્યનું સહકારી ખાતું અને રાજ્યનું ઉદ્યોગ ખાતું રાજ્યમાં સાર્વત્રિક ધોરણે ગ્રામોદ્યોગો અને નાના ઉદ્યોગોના વિકાસ માટે પ્રયત્નો કરે છે. આ ઉપરાંત જ્યાં જ્યાં સામૂહિક વિકાસયોજનાઓ દાખલ થઈ છે (રાજ્યમાં અત્યારે ૭૫ ટકા ગામોમાં આ યોજનાઓનું કામ ચાલે છે) ત્યાં ત્યાં આ યોજનાઓ મારફતે ગ્રામોદ્યોગોના અને નાના ઉદ્યોગોના વિકાસ માટે વિશેષ પ્રયત્નો થાય છે. એ જ રીતે રાજ્યના ફેટલાક પછાત વિસ્તારોમાં બહુલકી વિકાસયોજનાઓ દાખલ કરવામાં આવી છે, જે પછાત આદિવાસી વિસ્તારોમાં ઉદ્યોગોના વિકાસ માટે પ્રયત્નો કરે છે. અગાઉના મુખર્ષ રાજ્યમાં ૧૯૫૦ માં ગાંધીજીના સ્મારકરૂપે દાખલ કરેલી સ્વોત્પન્ન યોજનાઓ બંનેનાં કેન્દ્રો રાજ્યના જુદા જુદા ભાગોમાં અત્યારે કામ કરે છે તે પણ ખાદી અને ગ્રામોદ્યોગોના વિકાસ માટે પ્રયત્નો કરે છે. એ જ રીતે ખાદી ગ્રામોદ્યોગ કમિશનની અધ્યક્ષતામાં રચેલી કેન્દ્રો પણ ખાદી ગ્રામોદ્યોગોના વિકાસ અંગે રાજ્યના જુદા જુદા વિભાગોમાં કામ કરી રહ્યાં છે.

આ યાદી પરથી જોઈ શકાય છે કે રાજ્યે ગ્રામોદ્યોગો અને નાના ઉદ્યોગોના વિકાસની આવશ્યકતા જ સંપૂર્ણપણે સ્વીકારી છે અને એ માટે અનેક રીતે પ્રયત્નો કર્યા છે. એકબીજાનાં કાર્યક્ષેત્ર એવડાય એ જોખમ વહેરીને પણ આ પ્રયત્નો કરવામાં આવ્યા છે. એનું શું પરિણામ આવ્યું છે એની થોડી વિગતો હવે જોઈ લઈએ.

(૧) ઉદ્યોગ ખાતા મારફતે નાના ઉદ્યોગોના વિકાસ માટે થયેલું લગભગ બધું જ કામ શહેરી વિસ્તારોમાં થયું છે; ગ્રામ વિસ્તારોને એનો બહુ ઓછો ફાયદો મળ્યો છે. આ ક્ષતિ દૂર કરવા માટે ત્રીજી પંચવર્ષીય યોજના દરમ્યાન કેટલાક ગ્રામવિસ્તારોમાં ઔદ્યોગિક વસાહતો સ્થાપવાનું વિચારાઈ રહ્યું છે, પણ એના વ્યવહારુપણા વિશે શંકાઓ સેવાઈ રહી છે.

(૨) રાજ્યના સહકારી ખાતા મારફતે સંગઠનની દૃષ્ટિએ ઘણું મહત્ત્વનું કામ થયું છે. જુદા જુદા ગ્રામોદ્યોગોમાં કામ કરતા કારીગરોને સહકારી ધોરણે સંગઠિત કરવામાં સારી સફળતા મળી છે. ૧૯૫૧ માં ઔદ્યોગિક સહકારી મંડળીઓની સંખ્યા ૫૧૪ હતી અને એના સભાસદોની સંખ્યા આશરે ૩૬ હજાર જેટલી હતી. ૧૯૬૧ માં મંડળીઓની સંખ્યા ૧૭૩૪ થઈ છે અને સભાસદોની સંખ્યા ૧,૧૨,૫૦૮ થઈ છે. મુખ્યત્વે કરીને વણકરો, ચમારો તથા તેલીઓના સંગઠનો ઊભાં કરવામાં સારી સફળતા મળી છે. બાકીના કારીગરોનાં સંગઠનો વિશે હજી શરૂઆત થઈ છે એમ કહી શકાય.

આ ખાતાની પ્રવૃત્તિને લીધે કેટલી રોજગારી વધી, કેટલું ઉત્પાદન વધ્યું, કારીગરોની આવકમાં કેટલો વધારો થયો, વગેરે અંગે આધારભૂત માહિતી મળતી નથી એ વિશે કંઈ અનુમાનો પર આવવું શક્ય નથી.

આ ખાતા મારફતે ચલાવવામાં આવેલી તાલીમ શાળાઓનું કામ સંતોષકારક પરિણામો નથી લાવી શક્યું. એનાં કારણોમાં પૂરતી આવડતવાળા સ્ટાફનો અભાવ તેમજ તાલીમી-ઓની ખામીભરી પસંદગીને ગણાવવામાં આવે છે. આ વર્ગોમાં તાલીમ લેનારો વર્ગ મોટે ભાગે એમાં મળતી શિષ્યવૃત્તિ લેવા અને ત્યાર પછી જો નોકરી મળે તો નોકરી મેળવવા આવતો હોય છે. તાલીમ લીધા પછી બહુ ઓછા માણસો તાલીમ લીધેથી ધંધામાં સ્થિર થયા હોય એવું જણવા મળે છે.

ગ્રામોદ્યોગોમાં કામકાજની સુધારેલી પદ્ધતિઓ દાખલ કરવાની બાબતમાં તથા સુધારેલાં ઓળરો દાખલ કરવાની બાબતમાં કશું મહત્ત્વપૂર્ણ કામ થયાનું જણાયું નથી. ગ્રામોદ્યોગોને પગલેર બનાવવાની દૃષ્ટિએ તથા એમાં રોકાયેલા કારીગરોને વધુ આવક મળે એ દૃષ્ટિએ આ કાર્યક્રમને જેટલું મહત્ત્વ અપાવું જોઈએ તેટલું અપાયું નથી. કારીગરોનું સંગઠન કર્યું પ્રશ્નનો ઉકેલ આવી જતો નથી. એ સંગઠનનો ઉપયોગ ઉપરની પ્રવૃત્તિઓ જોસભેર ચલાવવામાં ન થવાનો હોય તો સંગઠનની ઉપયોગિતા રહેતી નથી. પરિણામે એક બાજુ સંગઠનની સંખ્યા વધતી જોવા મળે એ સાથે ઉદ્યોગમાં રોકાયેલા કારીગરોની સંખ્યા ઘટતી જતી હોય એવું પણ બનવા સભવ છે. ૧૯૫૧ માં કરેલી ગણતરી વખતે ઘાણીઓની સંખ્યા ૫૬૮૮ હતી. ૧૯૬૧ માં કરી કરવામાં આવેલી ગણતરી વખતે આ સંખ્યા ઘટીને ૪૦૯૭ થઈ છે. આ જ ગાળામાં તેલીઓની સહકારી મંડળીઓમાં વધારો થયો છે.

(૩) વિકાસ ઘટક યોજનાઓ, બહુલક્ષી વિકાસ યોજનાઓ, સર્વોદય યોજનાઓ કે સઘનક્ષેત્રયોજનાઓમાં ગ્રામોદ્યોગો અંગે થયેલી કામગીરી સંતોષકારક છે એમ નહિ કહી શકાય. આ બધી યોજનાઓ દ્વારા ગ્રામોદ્યોગોના વિકાસ માટે જે પ્રયત્નો કરવામાં આવ્યા તેના પ્રમાણમાં મળેલાં પરિણામો છેક જ અસંતોષકારક ગણી શકાય એવાં છે. એનાં કારણોમા મુખ્યત્વે આ ઉદ્યોગોમાં મળતા ખૂબ જ ઓછા વેતનને ગણાવવામાં આવે છે.

(૪) ગુજરાત રાજ્ય ખાદી ગ્રામોદ્યોગ મંડળની પ્રવૃત્તિઓ દ્વારા ખાદી અને ગ્રામોદ્યોગના વિકાસ માટે ઠીક ઠીક પ્રવૃત્તિઓ થઈ છે. એના જન્મને હજુ બે જ વર્ષ થયાં હોઈ એના કામકાજ અંગે અત્યારે કંઈ અભિપ્રાય આપવો શક્ય નથી. ગુજરાતમાં ખાદીનું ઉત્પાદન છેલ્લા દાયકામાં ૩ લાખ ચો. વાર પરથી વધીને લગભગ ૧૮ લાખ ચો. વાર (૧૯૬૦-૬૧) જેટલું થયું છે. એટલે ખાદીના ઉત્પાદનમાં છ ગણો વધારો થયો છે એમ ગણી શકાય. પરંતુ આ ઉત્પાદન ૧૯૫૮-૫૯ માં ૨૨ લાખ ચો. વાર જેટલું થયું હતું તે વધવાને બદલે છેલ્લાં બે વર્ષમાં ઘટ્યું છે એ સ્થિતિ સંતોષકારક ન ગણાય. ૧૯૫૭ થી ૧૯૫૯ દરમિયાન ગુજરાતમાં લગભગ ચાર હજાર અંબર ચરખા ચાલુ કરવામાં આવ્યા હતા તેમાંથી ૬૦-૬૧ દરમિયાન માત્ર ૨૫૦૦ ચરખા જ ચાલુ રહ્યા હતા એ હકીકત પણ સ્થિતિ સંતોષકારક નથી એમ જ બતાવે છે.

ખાદી સિવાયના બીજા ઉદ્યોગો અંગેની કામગીરીની તો હજુ શરૂઆત જ થઈ છે એમ કહી શકાય.

રાજ્ય ખાદી ગ્રામોદ્યોગ મંડળે છેલ્લાં બે વર્ષમાં સંગઠનના ક્ષેત્રે નોંધપાત્ર કામગીરી કરી છે. કારીગરોની સહકારી મંડળીઓ સ્થાપી એનું જિલ્લા સંઘમાં સંગઠન કરી ખાદી ગ્રામોદ્યોગની સઘની પ્રવૃત્તિઓ આ જિલ્લા સંઘો મારફત ચલાવવાની દિશામાં સારી પ્રવૃત્તિ થઈ છે. પરંતુ આ પ્રવૃત્તિની ઉપયોગિતા વિશે મારા પોતાના મનમા શંકા છે. દરેક જિલ્લામાં જિલ્લા ઔદ્યોગિક સહકારી સંઘો કામ કરતા હોય છે. જિલ્લામાં આવેલી ઔદ્યોગિક સહકારી મંડળીઓને મદદ કરવાની કામગીરી એને સોંપાઈ હોય છે. હવે ખાદી અને ગ્રામોદ્યોગ મંડળના કાર્યક્ષેત્રમાં આવેલા ખાદી ગ્રામોદ્યોગો માટે અલગ જિલ્લા સંઘો સ્થાપવાથી ગ્રામોદ્યોગ પ્રવૃત્તિનું બળ કેટલું વધશે એ જોવાનું રહે છે. હાલ કામ કરતા જિલ્લા ઔદ્યોગિક સંઘોમાં જ આ મંડળીઓ જોડાઈ જિલ્લા સંઘોને વધુ મજબૂત ન બતાવી શકી હોત એ વિચારવા જેવું છે જિલ્લા ઔદ્યોગિક સંઘોમાં તેલીઓ અને ચમારોની મંડળીઓ પણ જોડાય છે. એણે હવે એ સંઘમાં રહેવું કે ખાદી ગ્રામોદ્યોગના જિલ્લા સંઘમાં જોડાવું એ દ્વિધા એને માટે જામી થશે. ગ્રામોદ્યોગના ક્ષેત્ર કામ કરતી જુદી જુદી એજન્સીઓ વચ્ચે સંયોજનના અભાવે જામી થતી આવી કેટલીક સમસ્યાઓ વિશે વધુ ઉત્તેજ પાછળથી કરીશ.

(૫) ગ્રામોદ્યોગોંકરણ પર બધા કાર્યક્રમોની એકંદર અસર શી થઈ છે ? ગુજરાત રાજ્યના અર્થશાસ્ત્ર અને અંકશાસ્ત્ર વિભાગે આ ક્ષેત્રે શી પરિસ્થિતિ છે એની કેટલીક વિગતો પૂરી પાડી છે. અત્યાર સુધી આ ક્ષેત્ર અંગે કંઈ જ માહિતી મળી શકતી નહોતી. એ

મુશ્કેલી સહભાગ્યે હવે દૂર થઈ છે. આ વિભાગે હાથ ધરેલી તપાસ મુજબ ૧૯૬૦-૬૧ માં જુદા જુદા ગ્રામોદ્યોગો અને નાના ઉદ્યોગોમાં કુલે ૩,૮૫,૫૦૨ માણસો રોકાયા હતા. આ નાના ઉદ્યોગો એટલે જેઓને ફેક્ટરી એક્ટ પ્રમાણેની વ્યાખ્યા મુજબ નાના ઉદ્યોગોમાં લઈ શકાયા નહોતા તેવા ઉદ્યોગો. એટલે કે કારખાનામાં ૧૦ થી વધુ માણસો કામ કરતા હતા છતાં ફેક્ટરી એક્ટની ગણતરીમાં આવતા નહોતા. ૧૦ થી ઉપર સંખ્યા હોય અને શક્તિનો ઉપયોગ થતો હોય તેવાં કારખાનાંઓ સામાન્ય રીતે ફેક્ટરી એક્ટ મુજબની ગણતરીમાં આવી જતાં હોય છે, પરંતુ આવાં કોઈકે કારખાનાં જે આ ગણતરીમાંથી છૂટી ગયાં હોય તેઓને પણ આ વિભાગે કરેલી તપાસમાં લઈ લીધાં હતાં. વળી આ તપાસમાં બધા જ ઉદ્યોગોની તપાસ ન કરતાં માત્ર મુખ્ય સોળ ઉદ્યોગોની તપાસ કરવામાં આવી હતી, પરંતુ આ સોળ ઉદ્યોગો ૯૦ ટકા ઉપરના ગ્રામોદ્યોગોને આવરી લેતા હતા એમ કહી શકાય.

આ ૩,૮૫,૫૦૨ માણસોમાંથી કેટલા ગ્રામવિસ્તારોમાં કામ કરતા હતા અને કેટલા શહેરી વિસ્તારોમાં કામ કરતા હતા એની અલગ માહિતી મળી શકી નથી. આમાંથી વણાટ, સુથારી, લુહારી, ધાણી, હાથછડ વગેરે ઉદ્યોગોમાંથી ઠીક ઠીક પ્રમાણના લોકો શહેરી વિસ્તારોમાં કામ કરતા હશે એ માનવાને પૂરતાં કારણો છે. જરી ઉદ્યોગમાં રોકાયેલા બધા જ માણસો શહેરી વિસ્તારમાં કામ કરતા હતા.

આ જ વર્ષમાં ફેક્ટરી એક્ટ નીચે આવતા નાના તેમજ મોટા ઉદ્યોગોમાં કુલે ૩,૪૫, ૯૬૦ માણસો રોકાયા હતા. આમ ગ્રામોદ્યોગો, નાના ઉદ્યોગો અને મોટા ઉદ્યોગોમાં બધા મળીને કુલે ૭,૩૧ હજાર માણસો ઉદ્યોગોમાં રોકાયા હતા. જે ઉદ્યોગોને ગ્રામોદ્યોગોની તપાસમાં નથી લીધા તેઓની રોજગારીની સંખ્યાનો પણ અદાજ આમાં ઉમેરી લઈએ તો બધા ઉદ્યોગોમાં એકંદરે રોજગારી મેળવનારની સંખ્યા ૭,૭૦ હજારથી વધુ નહિ થાય.

૧૯૫૧ ની સેન્સસ મુજબ બધા ઉદ્યોગોમાં એકંદરે રોજગાર મેળવનારની સંખ્યા ૬,૬૨ હજારની હતી એટલે કે એક દાયકામાં આ સંખ્યામાં વધુમાં વધુ ખીન્ન ૧૦૮ હજારનો ઉમેરો કર્યો હશે એમ ગણી શકાય. છેલ્લા દાયકાનો વસ્તીવધારો ગુજરાત રાજ્યમાં ૨૭ ટકાનો થયો છે, જ્યારે ઉદ્યોગોમાં રોજગારી મેળવનારની સંખ્યામાં થયેલો વધારો ૧૬ ટકા જેટલો થાય છે, એટલે કે એકંદરે રોજગારીમાં ઉદ્યોગોની રોજગારીનું જે પ્રમાણ હતું તે ઘટ્યું હોય એમ દેખાય છે. વળી ઉદ્યોગોની રોજગારીમાં જે કંઈ વધારો છેલ્લા દાયકામાં થયો છે તેમાંનો મોટો ભાગ યંત્રથી ચાલતા નાના ઉદ્યોગોનો હોય એ બનવા સંભવ છે, જે બધા જ શહેરી વિસ્તારોમાં વિકસ્યા છે. એટલે કે ગ્રામોદ્યોગીકરણની દૃષ્ટિએ દાયકા પહેલાની પરિસ્થિતિમાં મોટો ફેર પડી ગયો હોય એવું માનવાને કંઈ જ આધાર મળતો નથી. ગામડાંઓમાં ફરતી વખતે પણ ગામડાંમાં ઉદ્યોગો ખીલી ઊઠ્યા હોય એવું કોઈ દૃશ્ય જોવા મળતું નથી.

ગુજરાત રાજ્યે ગ્રામોદ્યોગોનું મહત્વ પૂરતા પ્રમાણમાં સ્વીકારેલું હોવા છતાં અને એ માટે શક્ય બધા જ પ્રયત્નો કરવા છતાં સતોષકારક પરિણામ ન આવવાનાં મને બે ત્રણ

કારણો દેખાયા છે. એમાંનું પહેલું અને સૌથી મહત્ત્વનું કારણ મારી નજરે સંયોજનના અભાવનું છે. ગ્રામઔદ્યોગીકરણના ક્ષેત્રે કામ કરતી વખતે જુદી જુદી એજન્સીઓ વચ્ચે સંયોજનનો સદંતર અભાવ રહ્યો છે. રાજ્યનું ઉદ્યોગખાતુ, સહકારી ખાતુ, વિદ્યાસંયોજનનાઓ જેના હાથમાં છે તે ગ્રામવિકાસ ખાતુ, અને રાજ્ય ખાદી ગ્રામોદ્યોગ મંડળ આ ચાર એજન્સીઓ ગ્રામઔદ્યોગીકરણની જવાબદારી જુદી જુદી રીતે ઉપાડી રહી છે. એ ચારેયે ક્યારેય ભેગા બેસી કોઈ કાર્યક્રમ વિચાર્યા હોય એવું બન્યું હોય એમ લાગતું નથી પરિણામે ચારેયે પોતાને ઠીક લાગે તે જાતે કામ કર્યા કર્યું. અને ક્યારેક એકબીજાની વિરુદ્ધ પણ કામ કર્યું. આને કારણે બધાની એકંદરે શક્તિનો જે ભાગ ગ્રામઔદ્યોગીકરણને મળવો જોઈએ તે ન મળી શક્યો.

સંયોજનને અભાવે ઊભો થયેલ જિલ્લાની ઔદ્યોગિક મંડળીઓનો સંઘ અને ખાદી ગ્રામોદ્યોગ સહકારી મંડળીઓનો અલગ સંઘ એ હકીકતનો આગળ નિર્દેશ કર્યો છે. એવો જ બીજો એક દાખલો ખાદી ગ્રામોદ્યોગ મંડળના બીજા એક કાર્યક્રમમાં જોયો જે વણકરો મિલનું સૂતર વણતા હતા તેમને હાથસૂતર વણતા કરવાનો એક કાર્યક્રમ ઘડવામાં આવ્યો છે. આ કાર્યક્રમ હાથસૂતર વણવા માટે સારા વણકરો મેળવવાની દૃષ્ટિથી ઘડવામાં આવ્યો છે, પરંતુ એ ગ્રામઔદ્યોગીકરણના મૂળ હેતુ સાથે સુસંગત હોય એમ મને લાગતું નથી. જે વણકર મિલસૂતર વણતો હોય તે ભલે એ સૂતર વણ્યા કરે, એના કામમાં એ અંગે કંઈ મુશ્કેલીઓ પડતી હોય તો એ દૂર કરવા પ્રયત્ન કરીએ, પરંતુ એને એમાંથી છોડાવી હાથસૂતર વણતો કરવો એ યોગ્ય નથી લાગતું. કારણ? એનાથી નવી રાજગારી ઊભી કરવાનો ઉદ્દેશ સરતો નથી. એને બદલે જે વણકરે વણાટ બંધ કરી દીધો છે, અને ક્યાંતો કંઈ જ કામ કરતો નથી, અથવા ગમે તેવા બિનકારીગરીના જરૂરી કામોમાં જાય છે, તેને હાથસૂતર વણતો કરવાનો કાર્યક્રમ ઘડ્યો હોય તે મૂળ હેતુ સાથે વધુ સુસંગત થાય.

એ જ રીતે મિલસૂતર ન મળવાને કારણે વણવાનું બંધ કરી દેવામાં આવે, પણ હાથસૂતર મળતું હોય છતાં એને હાથ ન અડકાડવાની પ્રતિજ્ઞા લીધી હોય તેવા હાથશાળાના વણકરને હાથસૂતર વણવા માટે સમજાવવો જોઈએ એવું હાથશાળા અંગે કામ કરતા કાર્યકર્તાઓ વિચારતા હોય એવું દેખાતું નથી.

એક પ્રદેશમાં ડાંગરનો કે સીંગનો પાક ખૂબ જ મોટા પ્રમાણમાં થતો હોય અને એનું સ્થાનિક રૂપાંતર કરવાની બધી જ અનુકૂળતા હોય, છતાં એને જે હાથથી થતી ક્રિયાઓથી રૂપાંતર ન કરી શકાતો હોય તો કાચા ગાંઠ તરીકે બહાર જવા દેવા જાડેનર, પાગ, અન્ય રીતે એનું સ્થાનિક રૂપાંતર કરવા અંગે વિચાર જ ન કરવો, અને એવી પ્રવૃત્તિ બૃનેચૂર જે કોઈ હાથ ધરે તો એનો સખ્ત વિરોધ કરવો, એવું વડજી રાખતારાઓ ગ્રામઔદ્યોગીકરણના મૂળ હેતુને ચીસરાને જ વર્તે છે એમ માનવું પડે.

સંયોજનના અભાવના અથવા અમૂળ દૃષ્ટિના અભાવના આવા તો ઘણા દાખલાઓ ગણાવી શકાય. મને લાગે છે કે ગ્રામઔદ્યોગીકરણના કાર્યક્રમને સીધો માર્ગ નુકસાન થવું

હોય તો એ આ જાતના સંયોજનના અભાવને કારણે છે. સંયોજનના અભાવનું કારણ પ્રવૃત્તિઓને એના મૂળ સંદર્ભમાં ન જોતાં અલગ અલગ પ્રવૃત્તિઓ તરીકે જોઈએ છીએ તે છે.

આ દેશમાં ગ્રામઔદ્યોગીકરણનું મહત્ત્વ શા માટે છે અને કયા સંજોગોમાં આપણે એને વધુમાં વધુ વિકસાવવા માંડીએ છીએ એ ભૂલી જઈને હું હાથશાળાનું કામ કરતો હોઉં તો માત્ર હાથશાળાના વિકાસની દૃષ્ટિએ જ બધો વિચાર કર્યા કરું કે રંગિયાનું કામ કરતો હોઉં તો એનો જ બધો વિચાર કર્યા કરું, કે નાના યંત્રથી ચાલતા ઉદ્યોગોનું કામ કરતો હોઉં તો માત્ર એનો જ વિચાર કર્યા કરું, પરંતુ આ બધાને સમગ્ર ગ્રામવિકાસ સાથે અને ગ્રામઔદ્યોગીકરણ સાથે શો સંબંધ છે એનો વિચાર કરવાનું પણ ભૂલી જઈએ પરિસ્થિતિ આજે સૌથી મોટો અવરોધ ઊભો કરે છે. શહેરમાં ચાલતી પ્રવૃત્તિઓ અલગ અલગ પ્રવૃત્તિઓ તરીકે ચાલી શકશે અને પોતાપોતાનો વિકાસ પણ કરી શકશે, પરંતુ ગ્રામવિકાસ અંગેની કાંઈપણ પ્રવૃત્તિ એકાંગી પ્રવૃત્તિ તરીકે પોતાનો પૂરો વિકાસ નહિ કરી શકે એ સ્થિતિ આપણે જોઈતી વહેતી સમગ્ર લઈએ તેટલું સારું છે. ગામડાંનો સમાજ એ રીતે એકબીજા સાથે સંકળાયેલો અને ગૂંથાયેલો છે કે જો એ આગળ વધશે તો સાથે આગળ વધશે. એમાંનું એકાદું અંગ એકલું આગળ વધવા માગતું હશે તો આખો સમાજ એને રોકી રાખશે.

તેથી અલગ અલગ પ્રવૃત્તિઓ તરીકે વિચારવાનું છોડી દઈ સમગ્ર ગ્રામપ્રદેશને આગળ લઈ જવાની દૃષ્ટિએ વિચાર કરવો પડશે અને એમાં બીજી પ્રવૃત્તિઓની જેમ ઉદ્યોગોની પ્રવૃત્તિઓએ પણ પોતાનું સ્થાન લેવું પડશે. એમાં મોટા ઉદ્યોગો પણ હોય, નાના ઉદ્યોગો પણ હોય, અને ગ્રામોદ્યોગો અને ગૃહઉદ્યોગો પણ હોય આ બધી પ્રવૃત્તિઓ જે પ્રદેશમાં એ ચાલતી હોય તે પ્રદેશનો સંપૂર્ણ વિકાસ કરવાનો એક સમાન હેતુ લઈ ચાલતી હોય એટલે એકબીજાની વિરુદ્ધ કામ કરવાનું તો એમાં આવે જ નહિ, પણ એકબીજાને મદદરૂપ થવાની દૃષ્ટિએ જ બધું કામ વિચારાતું હોય.

બીજી રીતે વિચારીએ એક પછાત ગ્રામપ્રદેશમાં ગ્રામોદ્યોગો અને નાના ઉદ્યોગો વિકસાવવાનો આપણે પ્રયત્ન કરીએ છીએ. એ પ્રદેશમાં ખેતી અણવિકસિત છે, સિંચાઈનું પ્રમાણ પણ ઘણું ઓછું છે. પરિણામે એકારીતું પ્રમાણ ઘણું મોટું હોઈ આપણે એમ વિચારીએ છીએ કે એ પ્રદેશમાં ગ્રામોદ્યોગો બહુ મોટા પ્રમાણમાં વિકસાવવા જોઈએ. પરંતુ જે પ્રદેશમાં ખેતી અણવિકસિત છે, લોકોની આવક ઘણી ઓછી છે, અને પરિણામે જીવનધોરણ ઘણું નીચું છે, તેમાં ગ્રામોદ્યોગો પણ કેટલા વિકસી શકવાના? લોકોની ખરીદશક્તિ ન્યા ઘણી નીચી હોય ત્યાં ગ્રામોદ્યોગોને ટકવું સૌથી વધુ મુશ્કેલ પડે છે એ સૌનો અનુભવ છે. એવા પ્રદેશમાં ગ્રામોદ્યોગો સૌથી ઓછા વિકસી શકે છે, એટલે કે ન્યા-મુધી ખેતી, ગ્રામોદ્યોગો, બાંધકામ, શિક્ષણ, આરોગ્ય આ સઘળા કાર્યક્રમોને એકી સાથે હાથ ધરવામાં ન આવે ત્યાંમુધી એકલો ગ્રામોદ્યોગનો કાર્યક્રમ કદી સફળ થઈ શકશે નહિ.

અર્થાત્ ગ્રામપ્રદેશના સમગ્ર વિકાસનું આયોજન કરીને 'અને જરૂરી બધા જ પ્રકારના

ઉદ્યોગોના વિકાસનો કાર્યક્રમ ધરીને એને અમલમાં મૂકનારી એક સર્વસામાન્ય એજન્સી નીચે જુદા જુદા ઉદ્યોગો માટે કામ કરનારી એજન્સીઓ કામ કરતી થઈ જાય તો જ ગ્રામ-ઔદ્યોગીકરણનો પ્રશ્ન વધુ ઝડપથી ઉકેલી શકાય. આ દૃષ્ટિએ વિચારીએ તો પંચાયત રાજ્યની સ્થાપનાથી એક અનુકૂળતા ઊભી થાય છે : જિલ્લા પંચાયત અને પંચાયત સમિતિ પાસે અનુક્રમે જિલ્લાના અને તાલુકાના સમગ્ર વિકાસનું આયોજન કરવાની અપેક્ષા રખાઈ છે. આમાં ઉદ્યોગોનો વિકાસ પણ આવી જાય છે. આ સંસ્થાઓ મારફતે જ જે તે કાર્યક્રમોનો અમલ પણ થનાર છે. એટલે કે પંચાયત રાજ્ય પછી દરેક જિલ્લામાં અને તાલુકામાં જુદા જુદા ખાતાંઓ કે વૈધાનિક મંડળો સીધો અમલ કરવાને બદલે પંચાયત સંસ્થાઓ મારફતે જ પોતાના કાર્યક્રમોનો અમલ કરશે. આ પંચાયત સંસ્થાઓ સમગ્ર દૃષ્ટિ રાખીને કાર્યક્રમો વિચારી શકશે અને ખૂટતું સંયોજન લાવી શકશે એવી અપેક્ષા રાખી શકાય.

જુદી જુદી પ્રવૃત્તિઓ વચ્ચેના સંયોજનના અભાવે ગ્રામઔદ્યોગીકરણના ક્ષેત્રે ઝાઝો વિકાસ થઈ શક્યો નથી એ અનુભવ માત્ર ગુજરાત રાજ્યમાં જ મળ્યો છે એવું નથી, આખા દેશનો એ અનુભવ છે જુદા જુદા વૈધાનિક મંડળો દ્વારા કામ કરવાનો પ્રયોગ દેશે ગયા દાયકા દરમ્યાન કરી નેયો, પણ એમાં ઝાઝી સફળતા મળી નથી. તેથી હવે સ્થાનિક આયોજનો (area development plans) દ્વારા આ કાર્યક્રમને આગળ વધારવાનો પ્રયાસ થનાર છે. આયોજન પંચે ગ્રામઔદ્યોગીકરણનો સમગ્ર ગ્રામવિકાસની દૃષ્ટિએ વિચાર કરનારી અને અમલ કરનારી યોજના મંજૂર કરી એનાં ચાલુ વર્ષમાં ૪૬ કેન્દ્રો શરૂ કરવાનું નક્કી કર્યું છે. આવાં બે કેન્દ્રો ગુજરાત રાજ્યમાં પણ શરૂ થનાર છે આ યોજના સમગ્ર વિકાસની દૃષ્ટિએ ઉદ્યોગોનો કાર્યક્રમ ધડવામાં અને એનો અમલ કરવામાં પંચાયત સમિતિઓને મદદ કરશે. ત્રીજી પંચવર્ષીય યોજનાના અંત સુધીમાં દેશભરમાં આવાં કુલ ૨૦૦ કેન્દ્રો કામ કરતાં થઈ જશે આ યોજનાના અમલમાં જુદાં જુદાં વૈધાનિક મંડળો સાથે મળીને કામ કરશે.

ગ્રામઔદ્યોગીકરણના કાર્યક્રમમાં અવરોધક બનનારું બીજું મહત્ત્વનું કારણ એમાં વધતાં સાધનો છે. આ સાધનોના સુધારોનો કાર્યક્રમ જેટલી તીવ્રતાથી લેવાવો જોઈએ તેટલો લેવાયો નથી. જે કંઈ સુધરેલાં સાધનો છે તેનો ત્યાગ પણ થઈ શક્યો નથી. દા. ન. હાથવણાટનાં કેટલાંક સાધનોમાં સારો સુધારો કરવામાં આવ્યો છે, પરંતુ એનો વપરાશ બહુ જ ઓછા વણકરો કરે છે. મારા એક ઓળખીતા વણકરને હું જ્યારે જ્યારે મળતો ત્યારે ઝડપી પદાયતનું સાધન વાપરવાની લલામણુ કરતો. બે વર્ષે એના મનમાં એ વત ગિગી અને એણે સાધનનો ઉપયોગ કરવા માંડ્યો. ઉપયોગ શરૂ કર્યો પછી એને પસ્તાવો થવા માંડ્યો કે મારી સલાહ માનવામાં પોતે બે વર્ષે ઠાં બગાડ્યા ? પરંતુ ઝડપી પદાયતનો ઉપયોગ કરનારા કે પોતાની શાળ પર ટેકઅપ મોશન વગેરે લગાડનારા વણકરોની આજે પણ જો ગણતરી કરવામાં આવે તો જણાશે કે એ સંખ્યા ઘણી નાની છે.

થયેલા સાધનસુધારા જ અપનાવરાઓની સંખ્યા ઘણી ઓછી છે. એની સાથે સાથે સાધનોમાં મહત્ત્વના સુધારા ઘણા ઓછા થયા છે. જે સુધારા થાય તે કારીગરની કામ

કરવાની રીતમાં વધુ સફળતા લાવનારા ન હોય કે એની રોજમાં ફેરફાર કરનારા ન હોય તો કારીગરો એને ઝટ ઝટ નહિ સ્વીકારે. આજના ગ્રામોદ્યોગોની ઉત્પાદક શક્તિ એટલી ઓછી છે કે એમાંથી કારીગરને પેટિયુ કાઢતાં નાકે દમ આવી જાય છે, અને તોય માલ ખપાવવાની તો મુશ્કેલી ભભી જ હોય છે. એટલે જ્યાંગુધી ગ્રામોદ્યોગોના સાધનોમાં મહત્વના સુધારા નહિ થાય ત્યાંગુધી એ ઉદ્યોગોમાં રોકાયેલા કારીગરોની સ્થિતિમાં ઝાઝો સુધારો નહિ કરી શકાય, અને તો નવા માણસોને એ ઉદ્યોગોમાં આકર્ષાઈ પણ નહિ શકાય. ગુજરાતમાં તો સ્થિતિ વધુ વિચારણા એટલા માટે માગી લે છે કે એનીની મજૂરીના દર વધ્યા છે અને મોંઘવારી વધી છે એવા સંજોગોમાં તેની તે જ રોજ આપતા ઉદ્યોગોમાં ટકી રહેવાનું કારીગરો માટે ઘણું મુશ્કેલ બની ગયું છે.

આ પ્રશ્નની સાથે સાથે જ જતો પ્રશ્ન ગ્રામોદ્યોગોમાં શક્તિના ઉપયોગનો છે. જ્યાં-સુધી ગ્રામોદ્યોગોમાં શક્તિનો ઉપયોગ નહિ કરવામાં આવે ત્યાંગુધી એની ઉત્પાદકતામાં બહુ મોટો ફેરફાર નહિ કરી શકાય. ગ્રામોદ્યોગીકરણમાં માનનારા સૌએ આ પ્રશ્ન પર વિશેષ ધ્યાન આપવાની જરૂર છે. વીજળીનો લાભ બહુ ઓછાં ગામોને મળ્યો છે, અને આવતાં દશ વીસ વર્ષો સુધી તો એ જ પરિસ્થિતિ રહેવાની છે એવા સંજોગો દેખાય છે. બીજી પચવર્ષીય યોજનાના અંતે સાડીપાચસો ગામોને વીજળી મળી હતી. ત્રીજી યોજનાને અંતે બીજાં ૭૦૦ ગામોને વીજળી પહોંચાડવાનો ગુજરાત મંડળે કાર્યક્રમ ઘડ્યો છે. ગુજરાતમાં કુલ ૧૯ હજાર ગામો છે. આમાંથી ત્રીજી યોજનાને અંતે માત્ર ૧૦૦ ગામોમાં વીજળી પહોંચશે. આ ગતિએ આપણને બધા ગામોમાં વીજળી પહોંચાડતા કેટલા વર્ષો લાગશે એનો વિચાર કરી જોવા જોવો છે. હું માનું છું કે ગામડાંઓમાં વીજળી પહોંચાડવાના કાર્યક્રમને કરી વિચારી જોવા જોવો છે. ગુજરાત વિદ્યુત મંડળે એક સારી દરખાસ્ત ગામડાંઓને કરી છે કે જે ગામોને વહેલી વીજળી જોઈતી હોય તે લાઈન નાખવાનો ખર્ચ યોજનારવડે વિદ્યુત મંડળને અગાઉથી આપે. આવા બીજા અનેક ઉપાયો વિચારી ગ્રામવીજળીકરણના કાર્યક્રમને જેટલો વધારો શકાય તેટલો વધારવો જોઈએ.

ઉપરાંત માત્ર વીજળી પર શક્તિ માટે આધાર ન રાખતા શક્તિનાં અન્ય સાધનોના ઉપયોગ અંગે પણ જરૂરી ઉત્તેજન આપવું જોઈએ. સિંચાઈના કામમાં વીજળી નહોતી ત્યાંગુધી હાથ જોડી આપણે એસી રહ્યા નહોતા. જે વખતે બધું જ તેલ પરદેશથી મગાવવું પડતું ત્યારે પણ સિંચાઈ માટે બહુ મોટી સખ્યામાં ઓઈલ એન્જીનોનો આપણે ઉપયોગ કર્યો હતો. હવે તો તેલ ગુજરાતને ઘરઆંગણે પેદા થવા માંડ્યું છે તે વખતે ઓઈલ એન્જીનોનો ગ્રામોદ્યોગોમાં ઉપયોગ કેમ વધારી ન શકાય? વીજળી કરતાં ઓઈલ એન્જીનનો વપરાશ મોઢો પડે, પરંતુ હાથથી બધું કામ કરતાં જેટલું ઉત્પાદનખર્ચ આવે તેના કરતાં તો ઓઈલ એન્જીનનો ઉપયોગ કરવાથી ઓછું આવશે. ઓઈલ એન્જીનોનો ગ્રામોદ્યોગોમાં વપરાશ વધારવા માટે પૂરતું ઉત્તેજન આપનારો યોજનાઓ ઘડવાની ખાસ જરૂર છે; તો જ ગ્રામોદ્યોગોને પોતાના પગ પર ઊભા રહેતા કરવાની અને આ ઉદ્યોગોમાં રોકાયેલા કારીગરોને ઠીક ઠીક રોજગારી પૂરી પાડવાની આપણી મક્કસદો આપણે પૂરી કરી શકીશું.

ઔદ્યોગીકરણના આ જમાનામાં ગ્રામઔદ્યોગીકરણ ઉપર ખાસ ધ્યાન આપવામાં આવે તો જ એ વિકસી શકે એમ છે. સામાન્ય સંજોગો તો બધા એની વિરુદ્ધમાં જ કામ કરી રહ્યા છે. એ સંજોગોને એકે એક વિગતમાં વિચારી ગ્રામઔદ્યોગીકરણની તરફેણમાં કામ કરતા કરવા માટે ધણા ઉગ્ર અને નિખાલસ ચિંતનની જરૂર છે, તથા માત્ર ભાવનાની ભૂમિકા પર ઊભા ન રહેતા આખા પ્રશ્નને વ્યવહારુ દૃષ્ટિએ પણ તપાસવાની જરૂર છે.

અમદાવાદ શહેરમાં અગાઉ ધોડાગાડીઓ ફરતી હતી. વસ્તી વધવાને કારણે તેમજ અંતર વધવાને કારણે ધોડાગાડીનું સાધન ઓછું ઉપયોગી થતું ગયું, અને ઓટોરિક્સાઓ આવવા લાગી. ઓટોરિક્સાની અસર ધોડાગાડીવાળાઓ પર થવા લાગી, અને એમની સંખ્યા ઉત્તરોત્તર ઘટવા લાગી. આજે ઓટોરિક્સાવાળાઓની સંખ્યા અગાઉના ધોડાગાડીવાળાઓ કરતાં ઓછી નથી, પણ ધોડાગાડીવાળાઓ તો ધધાવિહોણા થઈ ગયા. ઓટોરિક્સા મોઢું સાધન હોવાથી સામાન્ય ઓટોરિક્સા ચલાવનારનું એ ખરીદવાનું ગજી નહોતું, અને એમાં પૈસાવાળા દાખલ થઈ ગયા. આજે એમાં મજૂરી કરનારો એક વર્ગ છે, બેડી આવક ખાનારો બીજો વર્ગ છે. જે સાધનમાં શોષણ બહુ ઓછું હતું, મોટે ભાગે સાધન ચલાવનાર પોતે જ એની માલિકી ધરાવતો હતો, તે સાધનમાં ગ્રામ સંજોગોને બળે શોષણ દાખલ થઈ ગયું છે. એ શોષણ રોકી શકાયું હોત, જે ધોડાગાડીવાળાઓને સગઠિત કરી એમને જ ઓટોરિક્સાઓ ખરીદવાની સગવડ કરી આપી હોત, અને ધીરે ધીરે કરીને વ્યવસ્થિત રીતે એક બાબુથી ઓટોરિક્સાઓ વધારતા ગયા હોત અને ધોડાઓ ઘટાડતા ગયા હોત તો આ પરિવર્તન બને તેટલું સરળ બનાવી શકાયું હોત, અને એ ધધામા આજે પેસી ગયેલા શોષણને પણ અટકાવી શકાયું હોત.

આ જ વસ્તુ ગામડાંમાં વસતા તેલીઓ, હાથછડ કરનારાઓ, સુથારો, લુહારો વગેરે કારીગરો અગે પણ લાગુ પડે છે આર્થિક પરિબળોની અસર નીચે અને સમાજની નિષ્ક્રિયતાને કારણે શોષણને વધારનારું આર્થિક પરિવર્તન આજે થઈ રહ્યું છે આર્થિક પરિબળો નીચે આવતું કેટલુંક સામાજિક પરિવર્તન અનિવાર્ય હોય છે, એને સમાજને અનુકૂળ કરી દેવું અને પોષક બનાવવું એમાં જ દીર્ઘદૃષ્ટિ રહેલી છે, રોકવામાં નહિ. પોતાને ઘેર કામ કરતો ધાંચી કે સુથાર કે લુહાર કે ગોલો પોતાનાં આજનાં સાધનો છોડી દઈ શક્તિથી ચાલતા સાધનો વાપરતો થાય અને એ રીતે સમાજમાં પોતાના પગ પર ઊભો રહી શકતો હોય તો એ પસંદ કરવા જેવું કે પોતાના ચાલુ સાધનોને વળગી રહીને એ પાંચ વર્ષે એમાં હારી થાકી જઈ પોતાનો બાપીકો ધધો છોડી દે, અને સામાન્ય મજૂરની માફક ગમે ત્યાં કામધંધો ખોળવા રજીવવા માટે એ સ્થિતિ પસંદ કરવા જેવી છે? આ રીતનું પરિવર્તન આજે ગ્રામસમાજમાં થઈ રહ્યું છે અને એને કારણે નવો શોષક વર્ગ પણ ઊભો થઈ રહ્યો છે. જમીનોમાંથી બેઠાડું આવક મેળવનારો કે ધીરધાર પર નભનારો વર્ગ એમાંથી ફાજલ પડ્યો છે તેણે હવે આ શોષણના નવા માર્ગો અપનાવવા માંડ્યા છે. આપણી ઔદ્યોગિક નીતિ એના શોષણને ઉત્તેજન આપનારી છે. નાના ઉદ્યોગોના નામે આ શોષણ ફાલશેફૂલશે અને ગામડામાં રહેલો ખરો કારીગર વર્ગ તો એમાં કયાય અદૃશ્ય થઈ જશે. ગ્રામસમાજને અનુકૂળ એવું ગ્રામઔદ્યોગીકરણ લાવવું હોય તો વ્યવહારુ દૃષ્ટિએ કેટલાક

પ્રશ્નોનો તોડ લાવવો પડશે અને શક્તિનો ઉપયોગ નહિ જ કરીએ એવા વલણને છોડવું પડશે. ગામડાનો કારીગર અને ત્યાંમુઘી પોતાને ઘેર રહ્યો રહ્યો અને જરૂર પડે તો ગામમાં એક ઠેકાણે બીજા કારીગરો સાથે સહકારી ધોરણે મળીને કામ કરી શકે તેવા અને ગ્રામસમાજ જેને હોંસે હોંસે અપનાવે તેવા સાચા અર્થના સ્વાવલંબી ગ્રામોદ્યોગોના મજબૂત પાયા પર ઉભેલું ગ્રામઔદ્યોગીકરણ કેમ અસ્તિત્વમાં લાવવું એ આપણી સામેનો આજનો મોટામાં મોટો પડકાર છે. આ પડકાર ઝીલવા માટે ગુજરાતમાં તો શક્તિનો ગ્રામોદ્યોગોમાં વધુમાં વધુ ઉપયોગ કરવો પડશે એવું મને લાગે છે. આવતા દાયકામાં ગુજરાતમાં મોટા ઉદ્યોગોવાળું ઔદ્યોગીકરણ વિસ્તૃત પ્રમાણમાં આવનારું છે, એની સાથે સાથે અને એની ઓથે ઓથે નાના પાયા પરના શક્તિથી ચાલતા ઉદ્યોગો પણ મોટા પ્રમાણમાં વિકસાવવાના છે. આ બંને પ્રવૃત્તિ ધણે મોટે અંશે શહેરોમાં જ ચાલશે. ગ્રામઔદ્યોગીકરણને આ બધાની વચ્ચે વિકસાવવું હશે તો શક્તિના ઉપયોગને એના પાયામાં રાખવો પડશે.

ઉપસંહાર કરું તો, ગુજરાતમાં છેલ્લા દાયકામાં ગ્રામોદ્યોગો કશે પ્રભાવશાળી દેખાવ કરી શક્યા નથી; આવતા દાયકામાં એણે વધારે સારો દેખાવ કરવા માટે પ્રાદેશિક આયોજન (area planning)ના પાયાને અરે શક્તિના ઉપયોગને સ્વીકારવો પડશે.

PSYCHOLOGY & EDUCATION SECTION

તા. ૨૧ મી ઓક્ટોબર, ૧૯૬૨ના દિવસે સવારે ૯ વાગ્યે ડૉ. શ્રીમતી મધુરી બહેન શાહના પ્રમુખપદે આ વિભાગનું કામકાજ શરૂ થયું હતું. પ્રમુખસ્થાનેથી ડૉ. શ્રીમતી શાહે કેળવણીને ક્ષમતા વિષયો ઉપર વિશદ મૌખિક વ્યાખ્યાન આપ્યું હતું. એ પછી રજૂ થયેલા નિબંધોનું વાચન અને તે તે નિબંધ ઉપર ચર્ચાઓ થઈ હતી.

THE MATSYAPURANA AND THE EDUCATION OF A PRINCE IN ANCIENT INDIA

Dr. S. G. Kantawala, Baroda

(Summary)

The Matsyapurana is one of the older Puranas and devotes several chapters on *rajaniti*. In these chapters one comes across some directions on the education of a prince in ancient India. It is, therefore, proposed to study critically the data on the education of a prince as revealed in the Matsyapurana and to evaluate the same by focussing comparative material from other sources.

A PSYCHOLOGICAL REVIEW OF INDISCIPLINE AMONG STUDENTS

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The disease of indiscipline among students of today is very wide spread in India and seems to be on the increase. A massing of evidence or citing of illustrations is not necessary to prove that students of today and particularly the senior ones have no regard for authority, possess little sense of duty, are not willing to shoulder any responsibility, are only too ready to oppose, show resentment against or quarrel with any rule, regulation or order that is inconvenient to them, are keen to pick up quarrel and put up a fight even on very insignificant issues. This prevalence of indiscipline among students has been creating awkward situations for Government, educational authorities, teachers, parents and the public alike. It has become so wide spread that students seem to have accepted the indisciplined and irresponsible way of life as if it were a part of their common mode of living and as if it were a sort of an extra curricular activity. Indiscipline and irresponsibility seem to have become, in the minds of man, synonymus of some special features of a student's life.

Opposition, protests, demonstrations, walk outs, strikes, hunger strikes, processions and violence to property and persons seem to have become a part of the career of a student. What one used to be known as the period of life for discipline, obedience, abstinence, self control, etc, has in the present time become just the opposite, It is not that students take up only just, fair and

laudable causes alone, but now they have come to take up mostly selfish, petty, mean and even unjust causes. The climax was reached when recently some students of a college killed the principal because he refused to let the former copy out answers at an examination.

All concerned, educationists, political leaders and Government Officers are worried about this problem, but no concrete steps seem to have been taken to improve the situation. The reason for the lack of any constructive suggestion seems to be that no body really has any idea or a well considered and effective remedy for this disease. There have been a number of vague suggestions and random and ineffective proposals, but nothing concrete and definite has so far been framed. The first requisite of a proper remedy for any disease is a correct diagnosis. Unless an ailment has been carefully studied and its causes are correctly diagnosed it will be futile to prescribe any treatment and to hope for any cure. The lack of any practical proposal against this growing evil really is due to the fact that we have not yet been able to put our finger on the causes of indiscipline among students. There have, no doubt, been stray attempts to vaguely generalise about the causes of such behaviour of students, but no scientific study has been made. These attempts have only been guess-works, mostly purposeless accusations sometimes, abuses, rather than scientific approaches to study the problem—any physical phenomena. Like social problems also need a scientific and logical approach.

The development of such an attitude on the part of students must certainly have a strong reason or reasons, may be psychological, social, economic, or a combination of all these, but it will be wrong to say that it is just a fanciful decision of the students' community that they should behave in an indisciplined manner. Even if it can be said to be as a result of an evil decision of students there must be some strong reasons with students to have taken such a decision and some motive force supporting and encouraging the continuation of such a behaviour. It should be possible to find out causes behind such behaviourism and to remedy them. Without any investigation or any scientific or systematic study the following accusations are usually made :

- (1) Evil designs of students
- (2) Exploitations by political parties
- (3) Lack of control or influence of Teachers

Those who lay more emphasis on the first reason say that students are just bad. They are bent upon doing the wrong things and creating difficulties. Such accusations are made on the basis that students have perhaps taken such a decision voluntarily and that if they want they can take a different decision and the situation will be improved merely by such a change in their decision. Such a view is not only not logical but it is against elementary psychological

principles of human behaviour. No human being, whether a child, adolescent or adult, can control his behaviour only by a simple decision.

The behaviour of any individual may it to be a student is not dependent entirely upon his voluntary decision alone. All our actions and patterns of behaviour are resultants of our internal stresses as well as external circumstances. Our internal stresses to a great extent determine our behaviour and the attitude that our students have adopted is not a voluntary one, but is the result of their own inner forces as well as the external surrounding. No useful purpose will be served by merely accusing or blaming the students but only with a scientific attitude of mind it will be possible for us to understand, tolerate and improve the ways of students.

Others come up with the theory that political parties are inclined to poison the minds of our students and those parties in order to make things difficult, for those in power, utilise students and mislead them. This again is not really a basic or a scientific reason. If the minds of students were so amenable to influences and their behaviour was so much to be determined by external persuasions then teaching them good ways or a disciplined behaviour should also be equally easy. This is, however, not true. Students are found to be not so very easily teachable as regards many things, therefore, there must be something in the psychology of students in their mental make up which makes them more amenable to influence of certain kinds of persons and ideologies than to other kinds. Students seem to be more prone to accept certain patterns of behaviour, therefore, to say that the political parties are to be blamed cannot be taken to be one of the basic causes of the spread of indiscipline among students.

Similarly some people vaguely blame the inability of teachers and lack of moral character in them. Such accusations, however, do not take us any nearer to the understanding of the problem and certainly do not help us in remedying the ill. The only way by which this problem can be solved is a careful, systematic and scientific study of the real and deeper psychological causes of indiscipline among students. Once the causes have been determined it will not be difficult to find out the remedy for them.

From the point of view of a psychologist the following seem to be the main causes of indiscipline among students :

- (1) Age of Experimentation
- (2) Trial of Strengths
- (3) Disappointment with elders
- (4) Frustrations in future prospects
- (5) Futility of the Educational system

It is absolutely wrong to say that students of the present day are just bad or that they have taken a voluntary decision to be indisciplined and it is far from the truth. It will surely be very revealing to examine the records of students of the past ages in this respect. A study of the past reveals that it seems to have been an age old custom with the older generation to condemn and to run down the younger one. From time immemorial it has been the common for the older generation to show disappointment at the coming generation. References—humorous and otherwise—are not lacking in literature when parents have expressed grave anxiety and horror at the degeneration of the youths. They have felt genuine anxiety as to what has happened to the youths and how they are going to handle the affairs of the world when they come of age or take up the reins into their own hands. In spite of such anxieties we find that each generation has been able to manage its own affairs pretty well, at least as well or as badly as the previous generation. Some psychologists will tell us that the causes of such show of disappointment are really in the psyche of the adults and not in the deficiency of the adolescents or youths. Individual cases come to our notice in which the feeling of the parents that the younger persons are so utterly useless is so strong that in many such families this happens to be the age when youngsters break away from their parents.

The truth is that adolescence has always been a period of experiments. This is the age when a child is shaping into an adult and is inclined to make experiments with himself, with things around him and with those who are in authority. He is feeling in his body as well as mind new power, new strength, and new impulses of adulthood. It is natural that he would like to measure this new strength. It is a common trait of adolescents that they want to make sure or wish to convince themselves that they are growing into adults and that they can now face the problems of life. They feel the impulse to experiment with their own new feelings and test their strength. They want to try their new tools and equipment. When a student is leading an opposition against a college authority it is wrong to say that he is acting in an irresponsible way. In fact he is learning to take upon himself graver and greater responsibility than is ordinarily given to him in course of his school or college work. He is wanting to assert.

It is during this age that many young men break away from the family and many young women form illicit alliances. The behaviour of students in challenging the authorities should, therefore, be considered natural. It is the age when they would like to try and see for themselves whether they can behave as adults. They seem to choose the destructive way of experimenting, perhaps, because in our educational system there is little opportunity for constructive leadership. If useful opportunities for experimenting with their newly growing strength were available they will not be attracted towards unsocial or antisocial activi-

ties. There is no better way of asserting and assuring adulthood than that by challenging authority or fighting the stronger one. The constructive, peaceful and cooperative way perhaps does not offer adequate opportunities for the trial of strength. It is only in opposition, quarrel or fighting that a real challenge is experienced and a thrill is enjoyed. Students who are trying to show disregard for authority, organising strikes, staging walk-outs or even becoming violent are trying ways of measuring their strength against the social environment. Looked from this point of view it will be evident that the behaviour of students is not so objectionable as it is made to be, although it may, no doubt, be inconvenient and uncomfortable to those in authority.

Another reason why students are so easily persuaded in opposing persons in authority is that they are not fully satisfied or rather disappointed with the performance of their parents, their teachers and their Government, all these being persons in power and symbols of authority. Every young person has in his imagination or fancy a picture of an ideal of what his father, his teacher or an officer ought to be, that is, an idealist symbol of all those who are in authority. When these persons do not come up to the mark in the estimation of students, their natural reaction is to dislike them, to oppose them and to wish to overthrow them.

Before children attain the age of adolescence, it must be admitted, they have to suffer a lot of injustice, unfairness, indifference, neglect, disregard and unreasonable treatment and documents at the hands of adults, but because they find themselves powerless, weak and incapable of putting up an opposition they put up with it. As soon as a tiny stream or strain of power begins to flow in their veins they are anxious to remove their difficulties out to drive out the causes of their sufferings. The first victims are naturally those, who are close to the adolescent and they are likely to become easy targets, if they fall below the students' expectations. Unfortunately or fortunately since the hoary past, our culture and traditions have placed a very high standard of conduct expected from parents and teachers. According to our common notions too much of an ideal behaviour is expected of our teachers, parents, guardians, leaders and elders. Moreover in the fancies of youngsters this picture of their ideal is rather over emphasised and when in actual practice their experience is that these elders fall much short of expectation, their disappointment is also great. Whether in the past parents, teachers, etc succeeded in coming up to this ideal standard is not our concern. We, however, are sure that the present parents as well as teachers and also others in authority do not come up to the standard that have been laid down in our tradition, scriptures, literature, and history books. We, therefore, fall below on the expectations of students and the secret resentment which in the years of childhood has been piling up and accumulating in the tiny hearts is poured out then they come to the school or the college age and

students find themselves placed in opposition to many elders and seniors. If it is true that the older persons do not come upto the expectations of students or that the elders are causes of disappointment, then it will appear that it is not the students who are bad but that it is the parents and those in authority who are perhaps at fault. This, however, is not the only basis for the present indiscipline among students.

Another big difficulty before students seems to be that the present educational system is perhaps unable to capture their imagination. College curricula and life possibly does not inspire their minds, infuse in them any enthusiasm and fire into them any idealism. Students do not seem to find interest, enough activity and enough work in the present schools and colleges. There is very little in our educational institutions which can catch the hearts of students. In some institutions which have an ideal before them, which have an objective or a target, which place before students a programme of a plan do not experience any difficulty regarding discipline. In most of our institutions students have a lot of free and idle time at their hands and whatever time they are required to utilise in the class rooms is not at all spent in an interesting manner that they do not at all feel inspired, enthusiastic or elevated. The teaching is so dull, the subjects so unproductive and teachers so uninspiring that it should not be surprising that schools and colleges are not loved by students, but some of them dislike the institutions they study in. The result is that they are easily attracted by a number of other activities which, however, undesirable are at least able to fill the vacant space of their time, energy and mind. Not only our educational curriculum is not fully interesting and informing but it is possible that somehow or other students may behave an unconscious or sub-conscious feeling that the education that they are receiving or that they are supposed to take interest in may not help them in preparing for the work and struggle of life. The lack of complete usefulness of our educational system is perhaps perceived by even the young minds of our students. It is claimed that educational institutions are supposed to build up character and to equip a young person for life but in schools and colleges how much do we do to fulfil this expectation? If we do so how far are we justified in demanding and expecting from students that they should put their heart into a thing which we ourselves are not able to make fully interesting and useful?

Another reason which makes the indiscipline way of life such an easy escape is that students, particularly of colleges, do not see before them a bright future. The future that they will have to face after their studies are over, appear to them uninspiring. They feel, perhaps sub consciously if not consciously, that the subjects they are learning are not going to be directly useful in life and that much of the time they are spending or learning these subjects is only to

get a degree. They are not going to utilize much of the knowledge which they are asked to put in hard labours. This feeling that they are engaging themselves in tasks which may not be directly profitable and fruitful lowers their interest in life. It spoils the morale and lowers them in their own estimation and results in creating disappointment, dissatisfaction and frustration. For any individual to take interest or feel enthusiastic about a job which it is absolutely necessary that he should feel and know, for certain that it is worthwhile and useful. The creative activity of adolescents and of adults can be properly utilised if they are engaged in activity both mental and physical by which they can achieve results which are worthwhile. If they are expected to devote their time and energy to take the utility of which may be doubtful we will have to blame ourselves for the students' disrespect towards those at present in authority. An education system is to build up a nation, to shape young persons into men and women of character, ability, energy and efficiency. If we do not do so to the fullest extent in our high schools and colleges then we would not be justified demanding wholehearted co-operation and undivided attention of students. If our school or college programme is such that it places heavy demands on the time, mind, attention and interest of the students of those we can be sure that the students would respond actively. A rigid and firm sense of discipline can be expected from a body of young persons only when they are kept actively engaged in a task which can inspire hope, purpose, objective and an ideal. A vague prospect of the future, a drifting picture of his career will not succeed in inspiring a youth. It cannot help in integrating the personality or inducing a spirit of collecting together and applying all the energy that one has.

Really there is not much which should frightened us or disappoint us in the indisciplined behaviour of students but there are features in it by which we may legitimately feel somewhat proud of it. It is true that an indisciplined behaviour is very undesirable and is also inconvenient to persons in authority, but if it is conceded that the student community has legitimate reasons for disappointment and resentment then it will have to be admitted that they have a right to express it. Conceding that students have a genuine cause for being resentful, then it should not be a matter of anxiety for us, but some way of hope that students as a community or a class are not prepared to sit idle and meekly suffer. This should be considered a healthy sign that students are prepared to be up against a thing which they do not consider right. They do not accept the traditional ideal of obeying anything that comes from authority. Their approach is that of experimentation and they wish to challenge and examine accepted dogmas. This should be appreciated and considered a desirable trait. Unfortunately in our society there is too much liking for the lack of initiative and too much appreciation for mechanically and without protest accepting of what is even uncomfortable and not right but what comes from those in autho-

city. There is so much fear among us that many of us are not inclined to raise a finger against principles and ideals of which we are not fully convinced. Many of us are yes-men and are not prepared to express our true opinions and honest views. It seems that the student community at least is prepared to act according to their views. Sometimes their views may not be quite right, but it appears that they are willing to act upto what they may take to be right. They are prepared to live upto their convictions and to face the consequences. We may, therefore, see a ray of hope from this direction that this section of our society have some sincerity of views, some fearlessness to express the truth, and readiness to act upto their beliefs and, if necessary, to suffer for that they wrongly or rightly believe to be a cause. It can be said that there are real, genuine and legitimate causes for students to be indisciplined and that we as educationists should be ready to appreciate the fact that our students community does not easily accept the views and convictions of others and that it is willing to act upto and be willing to suffer for what it believes to be a right course.

It may, therefore, be suggested that in educational institutions advantage should be taken of this special mental make up of students. There is a number of features which go to make up what is generally known as indisciplined and irresponsible behaviour of the student world and some of these features have very promising aspects. It should be the task of educators to pick up these desirable traits and to weave from them a pattern of behaviour of students which instead of working in the anti-social or an anti-national way would flow into constructive and useful channels.

The main features of the present indisciplined behaviour of students includes their feeling of independence, possession of surplus energy, and attraction for idealism, sense of unity and the ability to organise their action.

The fact that students very often engage themselves in activities which are undesirable shows that there is a store of extra energy in them, that they have enthusiasm and are capable of expressing strong feelings about certain things. This is a healthy trait and should be exploited or rather utilised by educators by channelising into useful activities. Looking to the fact that students take up many causes it is clear that they have a certain degree of idealism, that is, belief in certain selfless principles for which they are prepared to act upon when their action may not be materially beneficial. This ability to engage themselves in selfless activities should be utilised in healthy activities. Further in all agitations students show a high degree of unity and a fair degree of organisation and observe all rules of discipline and organisational procedure. There are very few, if at all, instance of disunity or breach of discipline, in activities that are organised by students as agitations. Thus it can be said that they are not completely indisciplined or unruly.

It is, therefore, submitted that instead of looking at the indisciplined behaviour of students with disfavour, disapproval and fear we should look upon it as a store-house for useful activities and we should guide the same into useful channels. Here an attention is naturally attracted to the experiences in many of our Basic Schools. In Basic Schools, where the atmosphere is surcharged with useful, creative, and constructive activities, where lessons are not dull lectures from an ill-equipped teacher, where education is not limited to the reading of a few books children are happy, obedient and co-operative.

Let us not, therefore, continue to harp on the deficiencies of our students, go on unnecessarily accusing them of motives which they themselves hardly recognise, but let us try to evolve some constructive type of activity programme which may not only make the life of students more useful but also more happy. The introduction of a few activities like the N. C. C. have been known to bring in a change in the atmosphere of a college or a school and generally speaking students of technical, vocational and professional institutions are known to be less infested with problems of indiscipline and less attracted by outside influence than others. Same is the case with certain well organised educational institutions. The reason is simple and not far to seek. In such institutions not only more activities and opportunities of action are provided, but in them a more purposive preparation for life is made and an ideal, an objective and a target is placed before the students.

VOCATIONAL DEVELOPMENT OF INDIANS

Dr. K. G. Desai, Ahmedabad

Western Studies of Vocational Development

That vocational choice is not an act of a particular moment, but is rather a developmental process starting from early childhood through the adult years is now an established theory. Among the earlier investigations in this area, the most notable one is that of Charlotte Buehler, Miller and Form and Ginzberg and his associates have improved upon the stages of vocational development of Buehler and the synthesis of all those works is given by Dr. Super and his associates in their 'Vocational Development.'* (pp. 40-41)

These stages are as follows :

A. Growth 0 to 14	B Exploration 15 to 24
1. Fantasy stage from 4 to 10	1. Tentative stage from 15 to 17
2 Interest „ „ 11 to 12	2. Transition „ „ 18 to 21
3. Capacity „ „ 13 to 14	3. Trial „ „ 22 to 24

* New York : Bureau of Publications, Teachers College, Columbia University, 1957

C. Establishment : 25 to 44

1. Trial from 25 to 30
2. Stabilization from 31 to 44

D. Maintenance : 45 to 64

- E. Decline : 65 onwards
1. Deceleration from 65 to 70
 - 2 Retirement ,, 71 onwards

Dr. Super, has also described the vocational development tasks during the

1. Preschool stage,
2. Elementary school,
3. High school,
4. Young adulthood,
5. Mature adulthood,
- and 6 Old age.

The Career Pattern Study of the Teachers College, Columbia University has thrown much light on the factors affecting the vocational development process

Vocational Development of Indians

Research is needed to study the vocational development of Indians. We don't know exactly how far the process of vocational development studied in America applies to our Indian environment. It is of course a huge task as India is a mixture of many cultures. As Ashok Mehta once described, "In India, there is a coexistence of centuries." The culture of Kashmir is entirely different from the culture of Kerala and the culture of Assam bears little resemblance with the culture of Gujarat. Spread of Education and industrial development are fast breaking these barriers of different cultures. An educated man in Kashmir shows almost the same attitudes, behaviour and inclinations as his counterpart in Kerala. But among the uneducated, differences are great. Secondly, in the same area even, there is great difference between the vocational development of an educated person and an uneducated one. If a person is fortunate enough to have college education, his vocational development goes on till he settles on some job after finishing his studies, but if a person does not go to school or leaves school after three or four grades his vocational development is of a much shorter period. In the rural areas, it has been very difficult to enforce compulsory primary education, because many people do not realize the need for educating their children. A farm labourer's or a shepherd's children usually follow their parents' vocations and get initiation into their jobs from the early childhood. Their vocational development thus takes place entirely in a different manner and is usually very short. The factor of identification plays a major role in their life. They are taught from early childhood that they have to pursue their parents' vocations and hence they begin identifying themselves with their parents.

In the urban areas where education is spreading rapidly, boys and girls get more chance to look at a variety of jobs for their future career. The vocational development of school going pupils takes place to some extent on the same lines that have been investigated in America, though the stages of deve-

lopment are reached a little later. However, our school and college students develop a narrow vision when they actually make the choice of their future career. Most of the high school leavers entering college intend to go in for Engineering or Medicine, irrespective of their abilities. Consequently there is a great rush for admission to our science colleges. Many of these boys and girls get frustrated when they fail to get admission to the College of Engineering or Medicine. I personally feel that there remains a gulf between the vocational development till the high school stage and the actual choice of an educational or vocational career of many youngsters. It is therefore the task of teachers and guidance workers to help them develop a true perspective of both their own abilities and the world of work before they have to make the final choice of career.

Research in Indian Conditions

Research is therefore needed to study (i) the vocational development of pupils who do not go to school or who leave school by the IV grade, (ii) the vocational development of pupils who finish high school but who do not join college and (iii) the vocational development of pupils who join college.

It would not be out of place if I quote here the summary of two investigations that have been done by two students of the A. G. Teachers' College, Ahmedabad.

The first investigation was carried out with the pupils of grades V, VI and VII. A questionnaire in the form of a booklet was prepared and administered to 348 boys and girls of these grades. The questions were divided into four categories :

1. The personal data and the data about their family
2. Information about the occupations of their parents, their friends' parents and near relatives
3. Information about their leisure time activities, their likes and dislikes and their attitude towards several types of work
4. Information about their vocational aspirations and reasons for those aspirations

The investigator personally explained each item of the questionnaire to these boys and girls and got their responses recorded. The following conclusions were drawn from this investigation :

1. Identification is a greater factor affecting the vocational aspiration of these middle school children. About 55 % of boys and 71 % of girls identified with their parents, near relatives or their friends' parents, in their choices.
2. The level of intelligence also affects their vocational aspirations. Pupils with higher IQs tend to aspire for jobs requiring higher studies, jobs of high prestige and good income. Pupils of average intelligence vary greatly in their aspirations and pupils with low IQs tend to aspire for lower occupations.

3. The socio-economic condition also plays some part in the vocational aspirations of these children, though there are many variations.
4. Girls aspire for jobs of doctors, nurses, teachers and pleaders mostly. Boys show a much greater variety in their aspirations.
5. About 25 % of these children show resemblance between their leisure time activities and job aspirations. The expressed interests have some relation with vocational aspirations.

This investigation leads us to conclude that the middle school stage in our country is more a fantasy of vocational aspirations rather than the interest or capacity stage. Thus our middle graders are to some extent more immature than their American counterparts. Of course, these findings need to be verified by many such investigations.

The second investigation deals with vocational aspirations of IX, X and XI graders. It was also carried out on the same lines as the former. The following are some of the conclusions :

1. Identification with key persons in the family is found to be less prominent than in the first investigation.
2. The interest pattern and the vocational aspirations bear quite a good resemblance.
3. Socio-economic condition of the family has much less influence on the vocational aspirations of these high school pupils.
4. The level of intelligence of the pupils has been found to have a correlation of about .5 with the hierarchy of jobs aspired by them.

This investigation thus leads us to conclude that many of our high school pupils are conscious of their interests and abilities while indicating their future vocational aspirations. Since most of our schools don't offer wide variety of subjects of study and since there are very few job opportunities for them while they are in school, our high school pupils don't have enough scope to tentatively try out their job aspirations. Thus their vocational development does not take place on the same footing as that of American school pupils. As a result of this when they have actually to make a choice of their educational or vocational career, they forget their earlier aspirations and blindly jump into wrong careers.

I shall conclude this paper with stressing once again the need for more research in this area of vocational development. The researches in turn should inspire our educational authorities to provide more and more opportunity to boys and girls to effectively mould their self concept keeping in view their own abilities. The less the gulf between the self concept of a person and his actual abilities, the less will be maladjustment, and the higher will be the efficiency.

THE CONSTRUCTION AND STANDARDIZATION OF GROUP TESTS OF INTELLIGENCE FOR GUJARATI PUPILS OF STANDARDS V, VI AND VII

Kumari Champa L. Bhatt, Ahmedabad

Introduction - This intelligence test battery is originally constructed by the author and standardized for use with the Gujarati speaking pupils in the age range 8.6 to 14.0 and studying in standards V, VI and VII of secondary schools in Gujarat. A representative sample of 9,822 pupils has been used for establishing the norms and the reliability and the validity of the tests are carefully checked and found to be appreciably high. The battery includes four verbal and three non-verbal tests. The administration of the tests takes 70 minutes.

The Concept of Intelligence : The author has widely studied the various views on intelligence. She agrees with P. E. Vernon that no 'univocal' mental test can be devised. Wechsler's definition "the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment" is accepted with a modification suggested by F. S. Freeman that the non-intellectual traits—"drive", "Incentive" and "Interest"—should not be ignored in assessing an individual's intelligence, but they cannot possibly be measured, as aspects of intelligence with the help of an usual intelligence scale.

Regarding Thorndike's sub-division of intelligence into three main types, (i) social, (ii) concrete and (iii) abstract, the present test maker holds the view that abstract intelligence receives greatest weight and is most pronounced in most of the tests which are designed for use with persons, who are presumed to have developed facility in dealing with concepts and symbols on the grounds of maturity. She further clarifies the point that even the non-verbal tests included in her battery are not devoid of demands upon ability to conceptualize and make abstractions.

The nature and nurture controversy has been reviewed in detail. The author tends to be a hereditarian of the moderate type. She does not treat the test scores as final. In her opinion, intelligence not only expresses itself but exists in the environment and hence the test maker must select material with a view to maintaining the differences in experiences which do not contribute to differences in intelligence.

The factorial point of view has also been studied. The investigator believes that the factors depend upon how the data fed in the machine are selected. She is conscious that 'pure' tests of g cannot be constructed, but calls herself a Spearmanite and plans to select the types of tests known for their g saturations and add the scores on various sub-tests for obtaining a measure of brightness.

Designing the Tests : The range of applicability was fixed in view of (i) schooling, (ii) age and (iii) cultural background. A reference to the differences in the urban, semi-urban and rural cultures is made, but in view of the practical exigencies, the author decides to design a test based on the exigencies, common to all the three cultures.

For sampling the behaviour to be tested an inclusion of a variety of tests is thought to be desirable as a combined score than the score of each sub-test.

Regarding the media, the test maker observes that language seems to be the principal source of the strength of the verbal tests, but it is also its weakness. Hence, she included in the battery, such verbal tests as could be constructed within the limited linguistic attainment of the testees. The non-verbal tests were to resemble verbal tests in the complexity of mental processes

There were ten tests which contained 282 items. The verbal tests consisted of (i) Reasoning problems, (ii) Verbal absurdities, (iii) Analogies, (iv) Matching professions and things, (v) Story completion and the non-verbal tests consisted of (a) Matching legs of tables, (b) similarities and differences, (c) classification, (d) Picture absurdities and (e) Spatial relations. All of them could not be arranged in a simple battery and administered on a single occasion. Hence the ten tests were divided into two forms, verbal and non-verbal. A practice test was also included. In spite of its shortcomings, the arrangement is chosen, for young children in India cannot be relied upon to follow the instructions by themselves. The use of a separate answer sheet was also avoided, for it would mean sacrificing accuracy and reliability at the altar of economy.

The Empirical Tryouts of the Tests : The manuscript of the test was administered individually to 20 pupils. They were asked to answer the tests aloud, say why they chose a particular answer and explain why other answers were incorrect. They were also made to describe what they saw in the pictures and the ideas conveyed by them. The tester thus verified the mental processes expected by her and also found out how far the testees were capable to them.

The pictorial items were got answered and interpreted by adults from various walks of life, so that ambiguities with regard to the pictorial presentation of ideas could be overcome. For the editorial review, a ruthless criticism of the tests by two experts was invited. This three-fold attack resulted into a substantial refinement of the tests before they were printed.

The second tryout was designed to check the suitability of instructions and other administration procedures.

During the third tryout the test was administered to 241 boys and 219 girls for the item analysis data. For an approximate check on item validity, the simplified item analysis procedure devised by Stanley is used.

In selecting the items for further tryouts the following things were kept in view :

- (i) The time to be devoted to the full test
- (ii) The amount of emphasis to be placed on speed
- (iii) Proper accommodation and attractive arrangement of the sub-tests
- (iv) Difficulty values of the items
- (v) Discriminative values of the items

The present test is designed to differentiate equally well among individuals at all levels of the total range and hence covers a wide range of difficulty. Items in the range of 16 to 85 per cent difficulty are chosen in such a way that the average difficulty level of the whole test is near 50 per cent. The suitability of difficulty value is given priority, but no item below the minimum significant discrimination level is retained. As a result, 93 items had to be rejected. But, in view of the time to be devoted to the full test, all the remaining items could not be retained. Hence, 43 of the suitable items were omitted and 146 were retained. The number of tests was also reduced from 10 to 8 by rejecting the tests of verbal absurdities and pictorial similarities and differences.

The selected items in tests were rearranged. In case of two tests it could not be done owing to the nature of the tests. Necessary changes in the practice test were made and the printed instructions were also finalised. All the eight tests were incorporated in one booklet only, but the verbal and the non-verbal tests were grouped separately and an attempt was made to grade the tests according to their difficulty as far as possible. This revised print was used during the subsequent tryouts.

During the third tryout, the time was noted down for each test and each of the 12 groups as follows : (i) The time taken by the quickest pupil, (ii) The time taken by the slowest pupil, (iii) The time taken by average pupils. The average time in each case was calculated. For fixing up the final time limit the merits and limitations of speed and power tests were considered. The present test was designed to be mainly a power test, but some time limit was thought necessary simply as a convenience for the instructor. This was done on the assumption that faster subjects tend also to be more proficient. A liberal time limit based on the time taken by average pupils was fixed for each test. 80 per cent of the pupils were found to finish the test during that time. During the fourth tryout, this arbitrary time limit was checked by administering the tests to a group of VI standard pupils and the new estimate was checked again during the fifth tryout on a sample of 255 pupils.

To adjust the test length so as to make it suitable to be administered within the set up of a normal secondary school, the number of tests was further reduced to seven by rejecting the verbal reasoning test. Thus the final script of the tests consists of (1) Matching legs of tables (non-verbal), (2) Matching professions and things (verbal), (3) Analogies (verbal), (4) Classification (non-verbal), (5) Pictorial absurdities (non-verbal), (6) Spatial relations (non-verbal), and (7) Story completion (verbal). These tests are composed of 139 items and the total time allowed for working out these items is 35 minutes,

To fix the method of scoring, the experimenter obtained two types of scores - (i) uncorrected and (ii) corrected by using the formula $R = \frac{W}{n-1}$.

The distributions of the two types of scores was studied and a decision to use the correction formula was taken, as the distribution of corrected scores was found to be less skewed.

Sample for the Final Tryout : The method of subdivision or stratification was used. The basic idea behind stratification is to sub-divide a heterogeneous population into sub-populations, each of which is internally homogeneous. Gujarat, excluding Saurashtra is divided into nine administrative units viz. (i) Ahmedabad, (ii) Baroda, (iii) Surat, (iv) Broach (v) Sabarkantha, (vi) Panchmahals, (vii) Kaira, (viii) Mehsana and (ix) Banaskantha. These are homogeneous units from the cultural view point also, for each has its own typical dialect and social customs. The three cities, Ahmedabad, Baroda and Surat represented three homogeneous urban cultures.

Thus the area to be tested was divided into twelve divisions. The representative sample must contain individuals, drawn from each stratum in accordance with the size of the sub-group. For estimating the size, the number of schools in an area was taken as a criterion, for it is dependent upon both population and spread of education. Such a rough estimate had to be accepted for want of anything more accurate.

A representative sample from each sub-group was secured by adopting the method of 'accidental' or 'incidental' sampling i. e. cases were chosen because they were easily obtainable. Both towns and villages from each district were included, but they could not be represented proportionately mainly because it was not possible to distinguish clearly between the two types.

The entire work of administering the tests was done personally by the author during the period 31-8-59 to 23-3-60. She visited 58 schools selected from among 3 cities, 17 towns and 13 villages i. e. 33 places and administered the tests to 5,173 boys and 4,649 girls. She could fairly maintain the proportion of boys in each stratum, but the same could not be done with regard to the girls. She visited all the girls schools in the districts and remaining quota of girls was obtained from the cities. Hence, she thinks that the sampling of girls is not purely 'stratified' but more or less 'accidental'.

Norms : The author thinks that grade norms for intelligence tests are of little practical value. However, she has given them so that the schools can use them for finding out whether they are normally advanced or backward by comparing their own grade averages with these norms.

But the main standardization and validation are based on age norms, which are meant to obtain a true measure of intelligence.

The scores of boys and girls are classified separately into one year groups 9, 10, 11, 12, 13, 14, 15 and above 15 and the mean, median and SD for each

distribution are calculated. The mean is used to determine the norm. The sex differences were found to be statistically significant and hence separate norms for the two sexes are given.

The data for the age-groups, 9, 13, 14, 15 and 15 were found to be truncated. Hence, curves of mental growth separately for boys and girls were drawn from the mean scores of various age groups and the following abnormalities were observed and explained :

1. The increase in the mean score from 9 to 10 years was less than that from 10 to 11 years. It was explained that most of the 9 year olds found in grades V or VI were accelerated and superior as the age of entrance to the primary school was 5 , and because the tests were not administered to pupils in grades below V. It is pointed out that similar abnormality is generally found by test makers working with school pupils.

2. There was an insignificant rise in the mean score at the age of 13 and decrease during the subsequent years. It was explained that this was a result of the presence of retarded pupils. The normal age for grade VII was 12 years and tests were not administered to pupils in grades above VII.

Hence the present sample could not be taken to represent age groups other than 10, 11 and 12. Hence the norms for the other age groups were corrected as is done by many psychologists. The Finite Difference Method of Graduation was employed to graduate the curve with a view to maintaining the tendency shown by the norms of 10, 11 and 12 year age groups. The curve was graduated to two points on each side and it showed regular growth, similar to those shown by other curves of mental growth. Any further graduation was mathematically unsound and hence the applicability of the test was limited to age range 8.6 to 14.0. A complete table of age norms was prepared by interpolation.

Measure of Brightness : 'Deviation IQ' is used to report the scores as is done by wellknown testmakers like Wechsler, Desai and Otis. These so-called IQs are actually standard scores with a mean of 100 and an SD of 16, which approximates the SD of the familiar Stanford-Binet IQ distribution. The raw scores were converted into IQs by converting the SD values of their deviations from the norm into the SD values of deviations of IQs from 100. PRs were also obtained by converting all probable deviations from the norms. The complete method of evaluating the test answers is given in the Manual of Directions. The distributions of IQs are studied age-wise and grade-wise.

Range of IQs : The lowest IQ obtained was 45 and the highest 138 and hence the author thinks that like Wechsler's tests, the present battery also does not have a 'ceiling' sufficiently high to discriminate sharply between individuals at the upper level of ability. She thinks that three reasons can be given, viz. (i) the use of non-verbal tests, (ii) a lack of emphasis on speed and (iii) a lack of sufficient effort on the part of the testees

Classification of Pupils according to their IQs : The scheme offered by Wechsler is used. It does not differ too much from those in current use. The fundamental basis of the scheme is the definition of intelligence levels in terms of statistical frequencies.

Reliability : The reliability estimates are calculated by the application of various methods given below :

They are—

1. .934 by Kuder-Richardson Simplified formula
2. .907 by Split-half Method; .951 when corrected for the reduced test length by the Spearman-Brown Prophecy Formula; .956 when corrected for range.
3. .965 by Guttman Formula
4. .980 by Rulon's Formula

Validity : The congruent validity of the battery was estimated by correlating the IQs on the present test with those obtained on three other intelligence tests as given below :

1. $r = .819$ with Shukla's adaptation of Stanford-Binet on a sample of 30 pupils
2. $r = .712$ (corrected for attenuation .880) with Desai Group Tests on a sample of 245 pupils
3. $r = .683$ with Joshi's Group Tests on a sample of 115 pupils

The concurrent validity of the tests was also estimated as shown below :

1. $r = .447$ with teachers estimate of intelligence on a sample of 537 pupils
2. (a) $r = .567$ with marks in academic subjects on a sample of 460 pupils
(b) $r = .288$ with marks in drawing on a sample of 460 pupils
(c) $r = .207$ with marks in craft on a sample of 460 pupils
(d) $r = .155$ with marks in Physical education on a sample of 460 pupils
3. Grade standing—This is based on the assumption that more able persons complete more formal education. On the basis of normal age for each grade all the 8,553 pupils could be categorized according to their grade standing. The means, medians and SDs for each category were as under :

Category	Mean	Median	SD
Accelerated	107.74	108.58	9.70
Average	102.58	103.28	15.25
Retarded by one year	98.10	99.35	14.30
Retarded by two years	93.67	94.85	14.00
Retarded by more than two years	84.20	83.80	15.75

Standard error of estimate : It was determined from the validity coefficients :

Criterion	SE (est)
Stanford Binet	9.37
Desai Group Test	11.17

Joshi's Group Test	11.23
School Marks	10.11

Other aspects of validity : (i) The correlation between the verbal and non-verbal tests was found to be .578 ($N=100$). (ii) Correlation of subtests with the entire battery ranged from .40 to .83 ($N=100$). (iii) Factor analysis by Thurstone's Centroid Method and Spearman's formula revealed only one general factor. (iv) The mean IQs for age groups 10, 11 and 12 were found to be nearly 100 and those for age groups 13 and 14 were found to be lower than 100 as they included retarded pupils. (v) The Chi-square test showed slight skewness in the distribution of scores which is in agreement with Weshsler. (vi) The average IQs of urban, semiurban and rural school pupils show significant differences as would be expected.

Publication : The test booklet and the manual of directions in Gujarati for administering, scoring and evaluating the tests are published by Bharat Prakashan, 44, Kalyan Bhuvan, Tilak Road, Ahmedabad, 1.

A COMPARATIVE STUDY OF ADJUSTMENT AND CHARACTER TRAITS OF DELINQUENT AND NON-DELINQUENT CHILDREN

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Introduction

With the advent of democracy and democratic values in our country, keen and active interest is being recently taken both by the government and the public in movements of social welfare, and especially for the education and uplift of the physically handicapped, mentally retarded, economically backward, socially rejected or oppressed and morally delinquent. With the financial aid, cooperation and directive from the government, social workers have directed much of their energy towards upbringing a number of social welfare institutions for such individuals, and psychologists have focussed much of their attention on the researches to investigate the problems of mental deficit, personality maladjustment and criminal degeneracy or delinquency associated with the handicapped and the neglected. The present study is one such research attempt in area of delinquency. What is then exactly meant by the term 'delinquency'? Are there any characteristic marks distinguishing a delinquent child from a non-delinquent, normal child? An attempt has been made in the instant investigation to provide an answer to this question to some extent to identify and understand the delinquent.

Factors contributing to Delinquency

Delinquency connotes any deviant behaviour, behaviour which is not normal or not following societal norms or even universal, standard practices accepted

by the time and the place. In a sense, delinquency can be said to refer to all types of offences, less or more serious, major or minor. unsocial deeds, breach of civil rights, licentious or lewd behaviour and immoral acts. It includes crime against society or institution, tort against an individual and sin against principles of morality.

Such deviant, offensive, criminal or in a word, delinquent behaviour is now no more considered to be directed by an innate instinct or an inborn motive. It is now generally agreed that instincts play a minor, if not non-existent, role in human behaviour. The human intent has no concept of right dress, decent talks, moral sex behaviour, private property or any of other norms of the society, whether custom or law. Conformity has to be learned, and deviation is not an inborn trait. With the advances in modern scientific psychology, the doctrine of stigmata degeneracy or the theory of atavistic retrogression expounded in old days by the Italian criminologist Lombroso explaining the phenomenon of criminal degeneracy has been to-day out of date. Criminals are not born with heredity, but are made mostly by circumstances. Delinquent or criminal behaviour has been shown with evidences of psychological researches to be the resultant of social, environmental forces working against the normally developing personality of the child, which consequently takes any deviant path, treaded upon by associates or strewn with other companion, concomitant variables or forced upon by the impact of the internal or external, conscious or unconscious motivators, impellers or propellers. It is also said and shown that delinquency is often manifestation in absence of adequate and effective control, internal or external, direct or indirect. Thus implicit in any study on delinquency, is one or the other of the two assumptions, as observed by F. Ivan Nye. One is the assumption that delinquent behaviour is 'produced' by the said variables; the other is the assumption that deviant behaviour 'occurs' in the absence of controls or if controls are ineffective. Those who make the first assumption are oriented to the question : "What causes people commit delinquent acts?" Those inclined to the second assumption are interested in the question : 'What prevents people from committing delinquent acts?'

To provide an answer to either question, whether delinquency is caused in a positive sense or it can be prevented with controls, let us examine first the findings of researches dealing with numerous factors shown to be causes or concomitants of the delinquent behaviour pattern. To summarise the results of a number of investigations undertaken by Cohen, Reiss, Zucker, Barker, Sheldon and Eleanor Glueck, Burgess, Schwartz, Ivan Nye and many others including the present author, delinquency has been proved to be associated with two main variables viz. family and society as ground against the figure of the individual child, which forms a third variable. Thus, these main variables are (1) family structure as well as family relationships, (2) social structure

as well as social influences and (3) characteristics and needs of the individual member susceptible to the influences of the family and the society. The factors subsumed under family structure are the type of the family, the size of the family, the birth order of the siblings, religious affiliation, housing accommodation, socio-economic status of the family, employed mothers, spatial mobility, broken homes, etc., etc. The family relationships include parent-adolescent relationships based on acceptance, rejection, indifference, partiality etc., nature of discipline and punishment, freedom and responsibility, parental appearances, disposition, character and indulgences, scope for information, advice and value agreement, opportunities for family recreation, economic attitudes, use of money, etc., etc. Social structure and social influences refer to restriction and compulsions following from typical structure of the society, opportunities for community participation and acceptances, type of the company, nature of locality, etc. etc. And finally, all these influences in one aspect or the other either work with or against the child striving for the satisfaction of his needs, especially the social needs for affection recognition and security and also his desire for new experience. If these needs are not satisfied adequately while resisting any of these influences, there result frustration and mental conflict which consequently tend to lead the child either to indulge in unhealthy mental mechanisms for psychological defense or to resort to deviant, unsocial, offensive, delinquent or criminal behaviour to defy the society or the family. All these factors subsumed under three main variables, viz., (1) family, (2) society and (3) child, can be said to conform to the two assumption with which we started i.e. delinquency is either caused by or occurs with weak controls. The child variables can be said to comprise causes and the family and society influences from the controls.

It should be born in mind here that all these factors may not be necessarily causes contributing to delinquency, but are often the concomitants associated with delinquency. Secondly, some think of multiple causes responsible for varied types of delinquent acts, while other search for a single causation theory.

Theories of Delinquency

Research workers seeking to explain delinquent behaviour in terms of single or multiple causation, have tried to formulate some sort of delinquency, covering all these causes or influences. No entirely satisfactory classification of delinquency theory has yet been devised. However, it is more useful to quote the attempt of one sociologist, Cohen, who has recently employed a five-fold classification, viz. (1) personality maladjustment, (2) differential association or learning, (3) social disorganization, (4) cultural conflict and (5) means ends theory. As discussed earlier, delinquency is either caused by one of the variables or occurs as a result of the lack of adequate controls. The personality mal-adjustment and differential association theories share the first assumption:

that delinquent behaviour is caused in a positive sense. Social disorganization, culture conflict and means-ends formulations are primarily attempts stressing ineffective controls which allow deviant behaviour. The resemblance between the personality maladjustment and differential association ends beyond the common point that criminal behaviour is caused by rather than result of the lack of adequate controls to prevent it. The personality maladjustment theory postulates that too much of frustration, rejection, insecurity and consequently much disturbed and excited emotions and unheeded unsolved or unsympathized mental conflict are likely to end in either some sort of less serious neurotic state of anxiety or hysteria or more serious dissociation, mental derangement, or personality maladjustment. Such incidental personality disorder lands the individual in some behaviour disorder either simple delinquent or serious criminal behaviour. For example, a kleptomaniac steals not because he wants the object, but because he feels insecure or rejected. More extreme case of mental derangement involves murder by paranoiacs who in their hallucination of persecution kill their imagined persecutors. Much of delinquency or criminality can be explained by this theory of personality maladjustment.

The second theory of differential association holds that just as any other behaviour is learned by association, crime is and must be learned from a preponderance of contacts with criminal behaviour and attitudes, whether or not the person exhibiting criminal behaviour is identified as a criminal. Along-with implied is the concomitant assumption that deviant behaviour and conforming behaviour are equally quick and effective as means to ends, though some criminal behaviour requires special skills. A hungry child who learns to wait for the mother also learns to steal the food in absence of mother. A student attempts to pass the examination either by reading hard or copying. Theoretically, society provides both conforming and criminal means, and the individual learns any depending on available association and differential impact of influences. An office accountant who wants to stay in a luxury hotel will find it difficult to save money from his salary; and similarly a young news paper boy will find it difficult to sell enough papers to buy a new car. It is more likely that both if in delinquent culture will learn to adopt criminal or delinquent means to achieve the end quickly. Thus, both personality maladjustment and differential association theories commonly hold that delinquency is caused; however, the differential association theory sees criminal behaviour as the expected result of criminal socialization, whereas the personality maladjustment theory sees it as the incidental result of disturbed emotions. All other theories explain delinquency as a result of lack of adequate controls to prevent it.

Thus, the theory of 'social disorganization' implies lack of consensus on social norms, which may occur when cultural change presents old new pattern

of behaviour and where the conflicting norms of ethnic groups intermingle. Under these conditions, social control and even socialization may become quite ineffective. If the individual is personally involved in groups with conflicting norms, the conflict is likely to become internalized with resulting personality disorganization. It often occurs during the declining periods of institutions and societies when basic values and institutional norms come to be questioned. There is an increase in delinquency rate in disorganized and declining societies or in period of transition and instability.

The 'culture conflict' approach is similar to the 'social disorganization', since it is one of the principal sources of such disorganization. Certain marginal groups experience culture conflict due to presence of persons of different cultures in the same group and at the same time absence of social control. The result is high delinquency rate and there is also sometimes personality disorganization. The rates are low even in slum areas if groups cling closely to the values, ideals and norms of their own ethnic groups, otherwise even so called educated people experience culture conflict leading to delinquency. For example, well behaved Indian students exhibit sometimes acts of delinquency in free America or even in India on return, when they experience culture conflict.

The 'means-ends' theory postulates that criminal behaviour results from extreme stress on material and other success, with little value placed on conforming behaviour as such. Maximum stress in such atmosphere would be presumably felt by low income groups who could not legitimately and honestly achieve high material goals. High delinquency rate associated with poor economic conditions can be explained by this theory. High crime rate throughout American societies or even among middle and upper classes may be attributed to their materialistic approach at cost of other higher values, besides, to other factors.

The last three approaches emphasize the social control to prevent delinquency. This conception of social control embraces four phases : (1) direct control imposed from without by means of restriction and punishment, (2) internalized control exercised from within through conscience, self-enforced precepts and model images, (3) indirect control related to affectional identification with parents and other non-criminal persons, and (4) availability of alternative means to goals and values for need satisfaction. For all these phases, perhaps, the family is the most important single factor in exercising social control and can go far towards the legitimate satisfaction of needs of the child. The other significant group in this respect is society including neighbours, schools, religious institutions, and other formal and informal groups.

In short, most researches attribute delinquency to lack of effective social control. However, such lack of control often contributes to personality disorganization. And even learning a crime takes place with disturbed emotions. Hence, the present author is of the opinion that all explanations of delinquency

can be subsumed under one principal theory, viz. theory of personality dissociation. It is the degree of personality dissociation, disturbance or derangement, that make people commit delinquent acts, major or minor, less or more serious crimes. Personality dissociation involved in delinquency follows the same process or is determined by the same influences as the integration of personality but only in different directions. Delinquency is one result of personality dissociation, its specific manifestation depending upon the degree of dissociation, derangement or disturbance in personality.

This is, in short, the nature or etymology of delinquency. Its symptoms are then revealed through the individual's character traits as well as in his or her behaviour patterns resorted to whenever he or she strives for living or attempts to achieve personal, social and family adjustment. An attempt has been made here to study some of the characteristics or symptoms marking the delinquent.

Problem

The present study has been undertaken with a view to finding out differences, if any, between the delinquent and the non-delinquent, normal children in development of their character traits as well as in their behaviour patterns of personal living and adjustment in the family and the society. In other words, it attempts to study comparatively how the delinquent children differ from normal children especially in their character traits, personal and social adjustment and family adjustment.

Procedure

With this purpose in view two groups of children termed as delinquent and non-delinquent, were randomly collected for the study. The delinquent group consisted of 150 inmates of the various government certified schools, and remand homes at different places in the Gujarat State. Their records and commitment to these institutions supplied an evidence of their delinquent behaviour and thus they were taken up as confirmed delinquents for the purpose of the study. An equal number of 150 normal children randomly selected from the normal school-going population and rated to be non-delinquent by the class teachers served as a parallel non-delinquent group in the study. From a larger sample of school children varying in age, intelligence and socio-economic status, 150 non-delinquent children were matched each to each with the delinquent group in age, intelligence and socio-economic status. For matching in intelligence, Raven's progressive Matrices Test of Intelligence was administered to all delinquent as well as to a large number of non-delinquent children. Similarly, they were rated on socio-economic level. On the basis of all these scores 150 non-delinquent children of almost same age, intelligence and socio-economic level matching with delinquent children formed the parallel non-delinquent group.

Next, all these children of both the groups were administered two Adjust ment Inventories, viz. (i) Personal and Social Adjustment Inventory, and (ii) Family Adjustment Inventory, constructed by the present author. Their adjust ment scores on both the scales were computed on the basis of their self-rating on each item of the scales. The maximum score on personal and social adjust ment inventory would be 50 and on family adjustment inventory it would be 40. Moreover the teachers or the superintendents closely acquainted with each rated each of these subjects on a character evaluation form specially designed by the author for this purpose. They were rated with respect to a number of character traits on a five point scale. There ratings were conveniently converted into character scores. The maximum score on this scale would be 100. All these scores of both the groups on personal and social adjustment inventory, family adjustment inventory and character evaluation form provided the data for comparison and further statistical analysis.

Results and Discussion

The main purpose of the study was to examine whether the delinquent children differed from the normal children in their character traits as well as in their nature of personal, social and family adjustment. Hence, the scores obtained on all these scales by both the groups were subjected to a statistical analysis by means of a special technique called 't' test, in order to test the significance of difference between the members of the two groups. The sum mary of the statistical result arrived at are presented in the table below :

Trait	Delinquent			Non-Delinquent				Level of Signifi- cance
	No.	Mean.	S. D.	No.	Mean	S. D.	C. R.	
Character (Max. score=100)	150	40.65	8.69	150	75.25	8.61	34.99	beyond .01
Personal & Social adjustment (Max. score=50)	150	8.56	3.41	150	23.32	2.31	43.41	„
Family adjustment (Max. score=40)	150	11.53	3.62	150	20.52	3.25	22.7	„

It would be noted from the above table that both groups differed signifi- cantly in all the three traits; the delinquent group scored definitely lower in adjustment and character evaluation—an important finding as expected and observed by others too.

Character and Delinquency

It is comprehensible that degradation of moral character and upgradation of delinquent behaviour are highly associated, perhaps because both are results of lack of adequate and effective controls over detrimental tendencies and in- fluences in the family and the society. Immorality and delinquency usually go

side by side when material gains are emphasized and given too much importance at the cost of high, moral and human values in social life. In low income families both the parents are working hard to make both ends meet materially and have little time left for affection or instruction for the child and least for the children; the easy and non-bothering course open for such working parents is either negligence and lack of supervision and discipline due to lack of time or too much strictness and undue punishment to achieve blind obedience in shorter time. Either way leads to breeding of vices and delinquent and criminal behaviour and the rate shows acceleration with similar company on the way. In case of upper class families, the father is too busy after the material gains and the society, mother cares more to satisfy her vanity and ego by running after social functions, variety shows and fashion parades, leaving the children to menial workers or maids engaged again to show off the richness. There is either free, loose discipline or a host of unwanted restrictions, under suppressions and conservative taboos to keep up the status and prestige of high family. Adolescents of such families seek privately satisfaction through unwholesome expressions. Again, the result is the manifestation of crooked and perverted behaviour. Similarly, unfair treatment, attitudes, favouritism or partiality shown by parents in any family breeds strained relationships and consequent resort to unsocial acts. Any way, nature of parent adolescent relationships is related to delinquency and consequently to character by affecting the elements of social control. If the discipline is extremely restrictive, it may prevent the adolescent from meeting his recreational and associational needs in his peer group. If discipline is absent or inadequate he lacks a portion of direct control over his action outside and inside the family. If parents make no demands, he also lacks a set of clear cut parental expectations to which his parents obviously attach importance and which might be incorporated into his personality as internalized controls. If discipline is unfair or if partiality is shown, it may be associated with an ambivalent or negative attitude towards the parents, which reduces the indirect control exercised by the parents. An attitude of this type towards parents makes difficult for the child to accept the parent as an agent in the formation of an adequate conscience in the child, prevents the adult from serving as a model to be imitated by the child and reduces the willingness of the adolescent to conform to please the parent. The result is the inculcation of vices—dishonesty, disobedience, irresponsibility and a number of immoral character traits and resort to delinquent behaviour, often simply to hurt the parent or to assert his hatred of familial and societal norms. Thus, low character is highly associated with high rate of delinquency. The findings of the present study confirm significantly this observation.

Each of the subjects under the study was rated by the teacher of the non-delinquent pupil or the superintendent of the children in delinquent group on a

number of character traits, such as honesty, reliability, responsibility, and even personality traits such as boldness, initiative, etc. The statistical test showed that the delinquents were significantly lower in these traits, (scoring on an average only 40.65 against 75.25 scored by the normal). However, one caution is apt here while interpreting these results. It is likely that the evaluation of the children on character traits would have been affected by the atmosphere effect or halo effect or a central tendency in judgment. The delinquents were all institutionalized and the superintendents were aware of their past records and as such the present judgments would have been more biased. It is suggested that non-institutionalized group of delinquents living with normal population of the society should be additionally studied for comparison in further research.

Adjustment and Delinquency

To understand the individual in greater details, both character evaluation and personality assessment, both of which are interpretations of human behaviour are essential. Character refers to the evaluation of an individual with respect to moral traits, particularly by a teacher or a priest for the purpose of recommendation. Personality connotes a wider concept; it is the most adequate conceptualization of a person's behaviour in all its details by a scientist to account adequately for all his responses and experiences as completely and economically as possible, for purpose of maximum understanding of the person. In a sense, personality and character are much related and sometimes overlapping concepts though each has its own distinct approach. The earlier discussion in the preceding section on character formation and its relation to delinquency applies equally well to the development of personality, which is also determined by the early childhood influences, the parent child relationships, parental attitudes and methods of treatment and discipline. Evaluation of moral traits shows the character of a person; the description of his ways of adjustment with his own self, family and society gives a picture of one phase of his personality. This section dealing with adjustment and its relation to delinquency delineates a part picture of the personality development of the delinquent.

Two Adjustment inventories, viz. (1) Personal and Social Adjustment Inventory and (ii) Family Adjustment Inventory, constructed by the present author in Gujarati and in process of standardization, were administered to children of both the groups. The test items refer to a number of behaviour patterns likely to be indulged in by an individual during his or her strivings for existence and in his or her dealings with other immediate members in the family or with a little distant members in the society. The responses to these test items describe under varied situations the degrees of possible emotional balance, maturity, endurance, resistiveness, initiative, adaptability, accepting and compromising attitude etc., or in other words, the capacity for personal adjustment, social adjustment and family adjustment. The statistics analysis of the

self assessment scores on both these inventories reveals significantly that the delinquent children were personally and socially less adjusted (mean score being 8.56 against 23.32 by the non-delinquent) and that their relations with other members in the family were also less adjusting, less wholesome and more conflicting (mean score being 11.53 against 20.52 by the non-delinquent). It is but expected that those who do not find the opportunities for the satisfaction of their due needs of affection, warmth of family love and social recognition, who thereby do not experience the feelings of security, identification and belongingness and who then in their attempts to satisfy their needs of curiosity or to explore opportunities for new experience receive only discouragement, restraint or repression, instead of adequate encouragement, guidance or direction, are forced to seek opportunities to express themselves through ways socially unapproved, mentally unhealthy and emotionally disturbing, consciously to resolve the mental conflict arisen out of failure and frustration, stress and tension. These individuals either take psychological recourse to defence mechanism which form one type of mental adjustment techniques or take practical resort to available unsocial acts and delinquent deeds which provide immediate and easy satisfaction with less strain. All these expressions and manifestations are reflected or revealed in their ways of mental adjustment or day-to-day personal, social and family adjustment. Naturally, in view of circumstances rearing delinquency, the delinquent children would be maladjusted and would score less on the adjustment inventories. The findings of the present study reveal the same observation and confirm the results of other studies.

By the way, the author at the end likes to suggest that since the two groups could also be independently treated as criterion groups for validating the adjustment inventories, the results confirm the validity of both the inventories.

Summary

It is commonly held that delinquency is closely related with low character and maladjustment. The present study was undertaken in order to examine this hypothesis scientifically. The sample for the study consisted of two groups viz. delinquent and non-delinquent, with 150 boys in each. The children from the government certified schools and remand homes, confirmed to be delinquents on the basis of their records, formed the delinquent group; and children from the regular schools, rated to be normal by school teachers, formed the non-delinquent group. Subjects in both the groups were otherwise matched in age, socio-economic status and even intelligence (on basis of scores on Raven's Progressive Matrices).

All these subjects were then scored on three scales, viz. (i) Character Evaluation Sheet, (ii) Family Adjustment Scale, and (iii) Personal and Social Adjustment Scale, constructed by the author and suited for this purpose.

Each child was rated on a five point scale on the Character Evaluation Sheet by the Class teacher, the Superintendent in charge or others knowing the child closely. Similarly, each child marked his responses on the Adjustment Scales. The scores for each were computed on all scales. The statistical analysis of the scores of both groups revealed the following facts .-

(1) Both groups differed significantly in their character traits; the delinquent scored very low.

(2) Both groups showed significant difference also in their responses to behavioural items for personal and social adjustment, the delinquent definitely being less adjusted.

(3) There were also significant differences between the delinquent and non-delinquent groups in the nature of their adjustment in the family, the former definitely scoring low.

FOLLOW-UP WORK OF THE VOCATIONAL GUIDANCE GIVEN BY THE PSYCHOLOGICAL RESEARCH INSTITUTE, KHAR Shri R. B. Naik, Bombay

Introduction

Frank Parsons is justly called the founder of the Vocational Guidance movement, for it was he who began the work which has led to the present spread of interest in Vocational Guidance.

Modern approach to Vocational Guidance which started around 1945 realized that guidance is not something that concerns only a part of the individual nor does it deal merely with a part of his life. The need is for "whole-child" guidance. In this approach individual counselling became the heart of the method in Vocational Guidance and also the concept of Vocational Counselling is replaced by Psychological Counselling.

The approach to Vocational Guidance in our Country is still highly test-centred. Concepts about Counselling are very vague and it is not understood in the sense of a one-to-one relationship. Creation of consciousness among people about the needs, usefulness and benefite of this type of guidance is more important besides the guidance facilities for the rapid growth of movement of Vocational Guidance In India.

Aim of follow-up work

One of the important services of a comprehensive programme of Vocational Guidance is the follow-up service. Generally speaking, the follow-up of pupils who have left school has been a sorely neglected phase of Vocational Guidance. The improvement of any guidance procedure is dependent upon a knowledge of its effectiveness. According to Froehlich and Viteles, approaches to the follow-up studies have been varied, but there is a similarity in the uses made of the

results of follow-up studies. The results are used (i) for curriculum revision, (ii) for improving the guidance programme, (iii) to identify those in need of further service, (iv) as an index of the educational and vocational opportunities of the community, and (v) to indicate current conditions involving local problems of demand and supply in regard to various initial marketable skills.

Keeping in view the various uses as mentioned above, the following objectives were formulated in preparing the questionnaire:

Objectives

- (i) whether the advice given was followed;
- (ii) whether they are successful in the courses of study or jobs undertaken;
- (iii) whether they are satisfied with their present courses of study or with their present jobs from the following view points (a) financial, (b) status and (c) nature of work;
- (iv) whether attempts are made for further progress;
- (v) whether they intend to change their present courses of studies or occupations;
- (vi) the number of persons who prosecuted their studies further;
- (vii) the reasons which led them to choose the particular course;
- (viii) the reasons which prevented them from prosecuting further studies of their choice;
- (ix) the reasons for rejecting the advice;
- (x) if the advice was rejected, whether they are successful in their own choice; and lastly
- (xi) to determine the general effectiveness of the total counselling process.

With these objectives in view, the questionnaire was prepared. The questionnaire was divided into two parts, (a) for those who are studying and (b) for those who are serving.

Date and Sample

After counselling students, a more respectable period to determine the effects of counselling is five years whereas six months is too short a time for the same. The guidance programme in the Psychological Research Institute was started from the year 1954-55. For this study cases were selected from 1957 onwards.

About 100 cases were selected from the years 1957-58 and 1958-59, about 50 cases from each year. The Institute had copies of the records of the counselled cases in a proper file arranged yearwise. Every fifth case was taken from each of these years making the total number 50 in each case. All necessary details were taken down from each of these case records. 100 cases thus selected were from schools of various grades representing social, cultural, economical and intellectual strata of the society in the city and suburbs of Bombay.

It was felt that if this study was to be a successful one, it was not advisable to send questionnaires by mail to these cases but take recourse to personal

visits. At the same time it was also not practicable to collect all the data by personal visits. Hence questionnaires were mailed to about 50 students with a stamped envelope with a high hope of getting high rate of returns.

It was a matter of regret that even though the blanks were sent with stamped envelopes for returns, the writer was successful in getting only seven questionnaires out of 50 questionnaires mailed. Hence personal visits were unavoidable. Personal visits were made to get the questionnaires filled. During the period, total number of blanks got filled in was 62 including those seven questionnaires received through mail.

Reason found for not getting the replies through mail

(i) Some did not understand the importance of the guidance given to them and took the matter very lightly. (ii) Some looked at the whole matter from suspicious view points. (iii) In the case of those students who were out of Bombay for their education, it was found in many cases that the blanks had not been redirected to them. (iv) Some families had changed their residence and blanks sent to them were received back. (v) Some students passed time in contacting their friends for knowing whether they had received such blanks and whether they wanted to fill in them. (iv) Some girls were married and were not interested further.

Analysis

As in the questionnaire, the whole data was divided into two parts for analysis, viz. (a) for those who are studying and (b) for those who are serving.

From the details taken down from the case reports of the sample for this study, it was found that in most cases three choices in different vocations were suggested to students. The following table shows (a) different vocations suggested and (b) percentage of students who either followed, rejected or acted on them partly.

Table No. 1

Showing different vocations suggested and percentage of students who either followed, rejected or acted partly on them :

Vocations	Followed		Rejected		Acted partly on them
	No. of cases	p. c.	No. of cases	p. c.	
1. Arts	10		9		1
2. Science	2		1		13
3. Commerce	5		4		—
4. Pharmacy	—		1		—
5. Engineering (Degree)	2		—		—
6. „ (Diploma)	4		—		—
7. A. M. I. E.	1		—		—

8. Nursing	1	-	-	-
9. S. T. C.	-	1	-	-
10. Textile Chemistry (Diploma)	-	1	-	-
11. Welding Apprentice	-	-	-	-
12. Studied upto S. S. C.	-	1	-	-
Total	25	44	18	32
				14 24

From the above table, it seems that the percentage viz. 44 p c. (N = 25) of those who followed the advice is rather high than that viz. 32 p c. (N = 18) of those who rejected it. The difference between them is not very great. However, the percentage of those who followed the advice is not discouraging.

Percentages of those who followed the advice, rejected the advice and who have been successful in their studies have been found out and a comparison between them is also made. The following table shows this comparison :

Table No. 2

Showing the successful and unsuccessful cases of those who have followed and those who have rejected the advice :

	Followed the advice		Rejected the advice	
	No. of cases	p c	No. of cases	p c
Successful	19	76	8	44
Not successful	3	12	9	50
Left Studies	3	12	1	6
Total	25	100	18	100

From the above table, it appears that 76 p c. (N=19) of those who followed the advice have been successful and 12 p.c. (N=3) have not been successful in their studies whereas 50 p c. (N=9) of those who rejected the advice have not been successful in the courses of studies that they had selected. These results definitely show the effectiveness of the guidance programme.

The criteria used in this evaluation was (a) percentage of marks they obtained in their examinations, (b) whether there was any failure, (c) whether they are satisfied with their courses of studies, (d) whether they wanted to change their present courses of studies.

To confirm the effectiveness of the guidance programme, percentage of pupils who have found the service useful and beneficial on the whole was also found out. The following table shows the same :

Table No. 3

Showing pupils who have found this service useful and beneficial on the whole or not :

	No. of cases	p. c.
Found useful and beneficial	48	84
Not found useful and beneficial	4	7
Indifferent	5	9
Total	57	100

From the above table, it seems that 84 p c. (N=48) of the students who are studying and included in the sample found this service useful and beneficial to them on the whole.

Part II

The second part of the analysis deals with the cases of those who are serving.

There were five students who were serving in one job or the other. Of these 5 students, 2 students accepted and 3 did not accept it. Of those who followed the advice, one passed Montessory course and is serving as a teacher. She is satisfied with her job. The other one had taken Civil Draftsmanship course. He left it half done as he found it difficult.

Of those who rejected the advice, one had taken up paid apprentice course in welding and seemed satisfied with it. The other one joined Arts course, left it half done and is serving as a clerk eventhough coming from a rich family. The third one is serving as a watchman. Poverty forced him to take up this job and he is not satisfied with it.

Tetrachoric Coefficient of Correlation (r_t) was found out to see whether those who followed the advice tend to be successful or not. The following table shows this relationship :

Table No. 4

Showing Tetrachoric r_t

	Failed	Successful	Total
Followed the Advice	7	20	27
Did not follow the Advice	11	10	21
Total	18	30	40

$$r_t = \cos \left(\frac{180 \times \sqrt{70}}{220 + \sqrt{70}} \right)$$

$$= 0.423$$

$$SE_{rt} = 0.204$$

This r_t is significant at 0.05 level. This shows that those who follow the advice tend to be successful in the courses of studies or jobs they undertake.

Suggestions and Conclusion

About 50 years back, no guidance was necessary in selecting a vocation or in making choice of the right courses of studies. Now the society is changing. The percentage of literacy is increasing and our country is passing through the age of National Development Plans the success of which depends largely on the planning of our man-power potential. To quote Mr. Mohsin, "Guidance, as we conceive it in the context of our National Planning, can alone provide a happy union between the training of knowledge and skill in the school, on the one hand, and the National requirement of man-power for achieving the mani-

fold targets set in our National Development Plan, on the other." A boy of to-day who is thinking of entering into the engineering field needs greater help than a boy who faced this problem about 50 years back when this field of occupation was smaller and simpler.

It is at this stage that need for Vocational Guidance is felt and is becoming essential both to the individual and to the society at length. Students and their parents are still ignorant of such helpful agencies Vocational Guidance Bureaus and without thinking or planning they are crowding universities. As a result, we see dissatisfaction and unemployment even among the educated and also that degrees in Arts and Law are losing their importance.

To avoid this type of situation and to make students and parents conscious of the usefulness and benefits of such guidance and in order to make it more effective especially at the school level, it is felt that

(a) more guidance facilities should be made available to students;

(b) at the school level, more emphasis be laid on educational guidance rather than on vocational guidance. In most of the cases, the immediate need of a boy is to choose his future course of study. The course that he takes up largely determines his future career;

(c) lack of more facilities for dissemination of Occupational Information is one of the greatest handicaps to the growth of this movement. Many parents and students have very little knowledge about non-university and technical courses. In schools, therefore, stress should be laid on Occupational Information Service;

(d) to acquaint parents with the world of work, they may be invited at career conferences. Monographs and Career Pamphlets should also be circulated among parents. Career Masters in schools can do this work;

(e) every year about 10 to 13 teachers are being trained as Counsellors. However, the importance of administration of tests and counselling interviews in schools is not realized by most of the school authorities. Head Masters should be able to convince the Management the importance of this and they should see that students in their schools get all the benefits of the training and knowledge of these Counsellors;

(f) before administration of test and conducting counselling interviews, it is necessary to ascertain that students have enough Occupational Information;

(g) the need of vocational guidance should be felt and not imposed upon which is generally the case at present in schools;

(h) more professional colleges should be opened so that talented pupils having aptitudes are not denied training in which they are interested and likely to be successful.

To conclude, Blum and Balinsky have reported, in their book Counselling and Psychology, some follow-up studies conducted by some eminent Psycholo-

gists. Of those studies, one was conducted by Viteles on 75 young people and he found that (a) none of those who followed the advice failed to find employment, (b) those who failed to follow the recommendations were earning more money but they were mostly in blind-alley jobs, (c) of those still in school, there were more failures among the pupils who did not follow the recommendations.

In the studies conducted on 50 clients, Coe and Habbe found that (a) of the 16 who had sought educational advice primarily, 10 had acted upon it, four planned to act upon it, and two did not plan to act upon it, (b) of the 32 who sought vocational guidance primarily, 17 had acted upon the advice, three planned to act upon it, three had acted upon it in part, and nine did not plan to act upon it.

Barber conducted a follow-up by interview of 87 clients, by mail of six and he found that (a) the students generally followed the occupations they selected in school and that (b) they were apparently well adjusted, since they expressed happiness with their homes and surroundings.

From the analysis of the data collected for the present study, it was also found that (a) of the 62 students given vocational guidance, 27 followed the advice, (b) 14 acted upon it in part, (c) 21 did not act upon it and (d) of those who accepted the advice, there were more successful cases than in those who rejected it.

Thus, the improvement of any guidance procedure is dependent upon a knowledge of its efficacy. Follow-up study as a part of guidance programme provides more extensive research to improve the services offered—either by discovering their worth or by obtaining information which facilitates the operation of the programme.

(Continuation on p. 351, for a remaning article)

MEDICAL SECTION

On 21st October, 1962, at 2 p. m. when the eminent physician Dr. B. B. Yodh presided over a symposium in which the well-known doctors, Dr. N. H. Desai (Physician), Dr. M. D. Desai (Surgeon), Dr. Anklesaria (Gynecologist), Dr. H. T. Jhala (Pathologist of Haffkin Institute, Bombay) and Dr. Niyogi (Baroda Uni.) took part and explained to an eager audience the progress in the various subjects and difficulties of conducting research in addition to the routine medical or teaching work. We here give the material received so far.

NOTE ON DISCUSSION ON RESEARCH

Dr. H. I. Jhala, Bombay

Dr. Jhala explained the scope of research which can be undertaken under the aieges of regional research voluntary group such as Gujarat Research Society. The three medical colleges, research institutions in Jamnagar and the V. S. Hospital had shown considerable progress in publishing matter of importance. Most of the studies were, however, based on the availability of material at the local site. Stress was sometimes on a disease manifestation, but there was no stress on incidence of disease or cause of death or genetic studies of communities or problems which are of topical interest in a particular situation. There were, however, few exceptions in the report of Filariasis from Jamnagar or Autopsy studies in Ahmedabad or Blood Group studies in Ahmedabad. However, generally speaking the subjects covered by all institutions were wide. No school of thought was developed for developing a particular line of research. Intensive studies on some of the local problems could be initiated and could be promoted by voluntary agencies. The high grade research of the type which I. C. M. R. or other research councils support are not likely to find place in the programme of the finances of the Research Society.

The research carried out in the various institutions shows that many workers were interested in the research career. It was entirely upto the policy of the State to see that these persons who take initial interest remain interested in research.

Dr. Jhala discussed some of the papers published in the last five years from these institutions and expressed a hope that in years to come local regional topics would find greater place in the studies.

સર્જરીમાં પ્રગતિ અને ગુજરાત

ડૉ. મણિભાઈ ડા. દેસાઈ, અમદાવાદ

છેલ્લા દાયકામાં શસ્ત્રક્રિયાના ક્ષેત્રમાં એટલી તો ઝડપથી પ્રગતિ થઈ રહી છે કે રાતદિવસ એ જ ક્ષેત્રમાં કામ કરતાં કે શોખવતાં ખુદ સર્જનને પણ નવાઈ લાગે છે, અને એ પ્રગતિને પહેંચી વળવા કે સમજવા શું કરવું એના વિચારમાં પડી જાય છે. જે સર્જનની આ સ્થિતિ હોય તો બીજાઓને આ પ્રગતિ અચંબાલરી લાગે એ સ્વાભાવિક છે.

પરંતુ સહેજ ઊંડા ઊતરતાં જણાશે કે આ પ્રગતિ, જેને આપણે આધુનિક શોધ એટલે “ન્યુક્લીઅર એનર્જી” કે “ઇલેક્ટ્રોનિક્સ” કહીએ છીએ તેને આભારી નથી. એ શોધના ફાયદાઓ તો હજુ દેખાવાના બાકી છે. અને એ જ્યારે ચાલુ વપરાશમાં આવી જશે ત્યારે તો સર્જરી હજુ વધુ ચમત્કારિક લાગશે.

બીજી વિચિત્ર વાત તો એ છે કે શલ્યશાસ્ત્રે-સર્જરીએ આટલી ઝડપી અને અસામાન્ય પ્રગતિ કરી બતાવી છે તે કોઈ એ ક્ષેત્રમાં કામ કરતા વૈજ્ઞાનિક-સર્જનના સંશોધનને આભારી નથી. સાચી વાત તો એ છે કે કોઈ સર્જન એવું મૂળભૂત સિદ્ધાંતને લગતું સંશોધન જ કયું નથી, છતાં આયુર્વિજ્ઞાન તબીબી ક્ષેત્રે સર્જરીએ જ મોખરાતું સ્થાન મેળવ્યું એનો યશ સર્જનને જાય છે.

એ વાત સાચી છે કે સર્જરીની આધુનિક પ્રગતિમાં દદીને નિઃચેતન બનાવવાનો-એને-સ્થેસિયાનો-ફાળો નાનો સ્પર્શ નથી. એ દિવસો ગયા કે જ્યારે દદીને મારી-બાંધી ટેબલ ઉપર સુવાડી, મોં ઉપર “માસ્ક” અને ગળામાં “ગેગ” નાખી, “કલોરો ફોર્મ-ઇયર” થી ગૂંગળાવી દેવાતો. સંભવ છે કે આજના નવા સર્જનને ખ્યાલ પણ નહિ આવે કે Relaxant દવાઓની જ્યારે શોધ થઈ ન હતી ત્યારે જૂના સર્જનો કેવી રીતે ઓપરેશન કરતા હશે! આમ શીશી સંઘાડવાના પ્રકારમાં થયેલા ફેરફારને લઈને શસ્ત્રક્રિયાને સહેલી બનાવવાનો યશ ઔષધક્રિયા-વિજ્ઞાનને-ફાર્માકોલોજીને ફાળે જાય છે, અને નહિ કે સર્જનને.

એવી જ રીતે “વોટર ટ્રાન્સફ્યુઝન”, Water and Electrolyte Balance, વ્હાટ કેમિસ્ટ્રી એટલે કે બાયોકેમિસ્ટ્રીમાં પ્રગતિ નહિ થઈ હોત તો, આજની “કાર્ડિઓથોગેસિક સર્જરી”—હૃદય-ફેફસાં ઉપરની છેદન-બેદન શસ્ત્રક્રિયા શક્ય બનત ખરી? અથવા તો કોઈ “ન્યૂરો-સર્જન” સવારથી સાંજ સુધી નિરાંતે મગજ ઉપર શસ્ત્રક્રિયા કરતો રહેવાને શક્તિમાન થાત ખરી? સર્જન બાયોકેમિસ્ટનો-જીવરસાયનશાસ્ત્રીનો-જેટલો ઉપકાર માને તેટલો ઓછો છે.

જીવનનું ભાગ્યેજ કોઈ પાસું એવું હશે કે જેમાં ભૌતિક શાસ્ત્રે-ફિઝિક્સે-કોઈ ભાગ નહિ લેખ્યો હોય. સર્જરી તો એની ભારે ઋણી છે. આજકાલનું ઓપરેશન થિયેટર, Mobile Light, Anaesthesia apparatus, Tilting Table, Electro-coagulant, Cutting currents, Airconditioning plant, Suction Apparatus, Portable X-Ray machines, Central gas-supply tubes, sterillizers-વગેરેથી ફિઝિકલ મેથોડોલોજી જેવું વિશેષ લાગે છે એમ જે કોઈએ ટીકા કરી છે તે સાવ સાચી છે.

અરે, આજના પ્લાસ્ટિક ઉદ્યોગના જમાનાથી પણ સર્જન અળગા રહ્યા નથી. પાટા-પીંડીમાં અને દોરાધાગામાં તો નામલોન વગેરે વપરાય એ સમજાય એવું છે, પરંતુ આજકાલ ઓર્થોપેડિક સર્જરીએ-વિકલાંગ વિજ્ઞાને-જે આશ્ચર્યકારક પ્રગતિ સાધી છે તેનો ધણોખરો યશ આ પ્લાસ્ટિક-પ્રોથેસિસને આભારી છે. અને એ વિજ્ઞાનમાં એવો જ ભાગ મેટાલર્જિસ્ટ (Metallurgist) પણ ભજવ્યો જે એને—ઓર્થોપેડિક સર્જનને વિટાલિયમ (vitallium) જેવી નોન-મેગ્નેટિક ધાતુઓ આપી હોત તો આજે જે રીતે ભાગેલાં તૂટેલાં ચુરાયેલાં હાડકાં બેસાડવામાં આવે છે તે શક્ય ન બનત.

આજે સર્જન નિર્ભય બન્યો છે, કારણ કે એને હવે ઇન્ફેક્શન-એપની, રસીની ખીક લાગતી નથી. એન્ટિ-બાયોટિક્સ થોડા વખતમાં નિરુપયોગી થઈ જશે એવી દહેશત એ પોતાના તબીબી મિત્રની માફક સેવતો નથી, કારણ કે એને ઓર્ગેનિક-કેમિસ્ટ-રસાયનશાસ્ત્રીની શક્તિમાં શ્રદ્ધા છે.

ઉપર બેયું તેમ સર્જનની આધુનિક પ્રગતિ ભૌતિક, રસાયન, જીવ ઔષધક્રિયા, મેટાલર્જી પ્લાસ્ટિક જેવાં વિજ્ઞાનો (Physical Sciences)ને આભારી છે, પરંતુ એમાં સર્જનનો ફાળો શો ?

એ વાત સાચી છે કે મૂળભૂત-બેઝિક રિસર્ચ-સંશોધનમાં ખાસ એણે ફાળો આપ્યો નથી, છતાં પોતાના ઓપરેશન થિયેટરને પ્રયોગશાળા બનાવી એપ્લાઇડ રિસર્ચના સિદ્ધાંત અપનાવી ભ્રમ ભાંગવાનું કામ કર્યું છે એની કિંમતે ઓછી આંકવાની નથી.

એણે Sympathetic System ઉપર જુદી જુદી જાતનાં સંખ્યાબધ ઓપરેશન કરી, કંઈ કેટલા ઈન્દ્રિય-વિજ્ઞાન શાસ્ત્રીઓ (Physiologists)એ પ્રતિપાદિત કરેલા સિદ્ધાંતો ભોંયભેગા કર્યા છે અને એવું જ જુદા જુદા Endocrine organsની કાર્યશીલતા વિશે મગજ કે કરોડરજ્જુની કાર્યવિધિ ઉપર પણ એણે ઓછો પ્રકાશ ફેંક્યો નથી. કેરોટિડ બોડી, બરોળ, મૂત્રપિંડ, હૃદય, ધમની-શિરા, ફેફસાના કેટલાયે અણુ-ઉકલ્યા પ્રશ્નો આજે એણે હાથમાં લીધા છે. ફક્ત ફૂતરા-બિલાડા ઉપર નહિ, પણ માણસ જાત ઉપર પણ વિવિધ અખતરા કરવામાં એ પાછળ પડતો નથી. એને નવું પકડતાં વાર લાગતી નથી, તેમ છોડી દેતાં પણ એ ખંચાતો નથી. આજે જૂની સર્જરીની ચોપડીઓ જેટલી નિરુપયોગી (obsolete) થઈ હશે તેટલું આધુનિકજ્ઞાનના ખીજા વિષમાં નહિ બન્યું હોય.

હેવટે પ્રશ્ન એ આવે છે કે આ બધામાં ગુજરાતના સર્જનોનું કે ગુજરાત સર્જરીનું સ્થાન શું. જગતની સાથે સાથે એણે કદમ મિલાવ્યા છે ખરા ? કે પછી ચરક-સુશ્રુતના જમાનાનાં શસ્ત્ર-કામની વાતો કરી કરી, સતોષ માને છે ? એ આધુનિક સંશોધનમાં રસ લે છે ખરો ? કે પછી એ તો આજકાલનું તૂત છે-ફેશન છે-કહી અવગણના કરે છે અથવા એ પ્રશ્નને ઠેલે ચઢાવે છે ? જે માનતો હોય, તો શાં સક્રિય પગલાં ભરવામાં આવ્યાં છે ?

ગુજરાત સંશોધન મંડળની સભામાં આવી ચર્ચા અસ્થાને નહિ ગણાય, થવી જરૂરી પણ છે, પરંતુ ચર્ચા થોડી વિગત માગી છે.

આપણા દેશમાં તબીબી વિજ્ઞાને કરેલી શરૂઆત મોટી કહેવાય. એમાંયે ગુજરાતે તો હજી પહેલ કરી છે. ગુજરાત મુખ્ય બેગુ હતું ત્યારે, કેન્દ્ર સ્થાન મુખ્ય હોવાથી, ગુજરાતી દાકતરો મુખ્યમાં આકર્ષાયા. મેડિકલ કોલેજ પણ ફક્ત ત્યાં એટલે એ પણ મોટું આકર્ષણ. ગુજરાતને એ ખોટ નહીં.

બીજાં વિજ્ઞાનોની સરખામણીમાં તબીબી વિજ્ઞાન જુદું તરી આવે છે. એની શિક્ષણ-પદ્ધતિ જુદી, એનું સંશોધન કાર્ય પણ જુદા પ્રકારનું. આવું સંશોધન કાર્ય ફક્ત શિક્ષણ ક્ષેત્રની સાથેસાથ કે લગોલગ રહીને જ કરી શકાય. ગુજરાતમાં પહેલી વહેલી મેડિકલ કોલેજ ૧૯૪૮માં આવી. એને ઠીક ઠીક પડતાં સહેજે વખત લાગ્યો.

તબીબી ક્ષેત્રનાં જુદાં જુદાં અંગોમાં સર્જરીનું સ્થાન અનોખું છે-જુદા પ્રકારનું છે, કડું તો ચાલે. એનાં બે કારણ છે, એક તો સર્જન અને એને જોઈતા મદદનીશોનો-સર્જરી ટીમ વર્ક છે એટલે—હજી પણ એટલો બધો અભાવ છે કે એ પોતાના ઓપરેટીવ કામને પહોંચી વળી શકતો નથી. એમાંથી માંડ માંડ વખત કાઢી પોતાનું અધ્યાપન કાર્ય આટોપે છે. આ સ્થિતિને કારણે એને સંશોધન-કાર્ય માટે વિચારવાનો કે કામ કરવાનો અવકાશ બહુ ઓછો રહે છે. પરંતુ મારી દૃષ્ટિએ બીજું મહત્ત્વનું કારણ એ છે કે સર્જરીના સંશોધનનો પ્રકાર પણ જુદા પ્રકારનો હોવાથી સર્જન એ કાર્ય ઓપરેશન થિયેટરમાં કરી લે છે એટલે બીજાને નજરમાં આવતું નથી આવું કાર્ય, “ટેકનિકલ એક્પ્રેક્ટર્સ” ઉપર હોય એ સ્વાભાવિક છે; જેમ કે નવા પ્રકારનું “ઇન સિઝન”, નવું ઇન્સ્ટ્રુમેન્ટ, નવું ઓપરેશન, નવું સ્યુચર મટીરિયલ, નવા ડ્રગ્સનો ઉપયોગ વગેરે. આ બધી સામગ્રી-હકીકત ભેગી કરી, એના ઉપર લખે અને એનાથી સતોષ માને. અલબત્ત, આ બધી ટેકનિક બીજાં વિજ્ઞાનોની પ્રગતિની મદદ માગી લે છે એટલે આને બહુ તો “એપ્લાઈડ રિસર્ચ” —વ્યવહારુ સંશોધન કહી શકાય. આવા પ્રકારનું સંશોધન ઘણા ઘણા ઠેકાણે કરી રહ્યા છે. એને માટે નાની મોટી સંસ્થાઓ નાની મોટી ગ્રાન્ટ પણ આપે છે આજકાલ અમારી સંસ્થામાં નીચે પ્રમાણે કામ ચાલુ છે:-

Department of Medicine

- (1) Prognostic of Coronary Heart Disease
- (2) Anticoagulants in Cerebrovascular Disease
- (3) Study of clinical patterns of Diabetes (Review of 420 cases)
- (4) Study of aetiological incidence of heart disease in Gujarat
- (5) Electrophoretic patterns of serum proteins in cirrhosis of Liver
- (6) Blood groups in Gujaratis in health and hypertension
- (7) Presentation of pyrexial reactions of blood transfusion with pethidine, Dexamethesone and chlorphenizamine
- (8) Study of the following drugs :
 - (a) ‘ C. C. F. ’ in anaemias
 - (b) ‘ Intestopan ’ in various diarrhoeas
 - (c) ‘ Dehydroemetine ’ in amoebiasis
 - (d) Dirandixin in Hypertension
 - (e) Kenalgescic in rheumatic fever

- (f) Intrathecal decadrone in T. B. Meningitis
- (g) Perolysen in High Blood Pressure
- (h) Prednisolone in Typhoid Encephalitis
- (i) Prednisolone in Nephrotic Syndrome

Surgery

Department of Orthopaedic Surgery

- (1) Congenital Talipes Equino Varus Clinic; Study of relapsing rate; evaluation of operative and conservative treatment
- (2) T. B. Spine-clinical study in evaluation of operated cases
- (3) Normal calcium values in healthy Gujaratis
- (4) Evaluation of chemotherapy in advanced malignancy
- (5) Hand injuries, study of causes and results of operative treatment
- (6) Study of sub-clinical rickets
- (7) Follow-up studies of the Intramedullary Nailing and S. P. Nailings in all recent fractures.
- (8) Clinico-radiological correlation in backache (non-tuberculous)

Department of Plastic Surgery

- (1) Value of skin grafting in Burns
- (2) Results of Cleft lip and Cleft palate by a new technic

Department of Cardiac Surgery

- (1) Study of results in Mitral Stenosis
- (2) Operative results in Bronchiectasis

Department of General Surgery

- (1) Estimation of chemotherapy in advanced malignancy
- (2) Study of chemistry of vesical stones
- (3) Study of cancer tongue in Gujarat with special reference to its aetiology
- (4) Study of tuberculosis in patients suffering from peptic ulcer

Department of Obstetrics and Gynaecology

- (1) Value of Placental Blood Transfusion
- (2) Dirandixin in Obstetrics, study of—
- (3) Siquil in Obstetrics, study of—
- (4) 'Flagyl' in Trichomonas vaginitis
- (5) Anaemias in Pregnancy, study of—
- (6) Steel wire suturing of Internal Os in treatment of incomplete Os cervix in habitual abortions, a new technic
- (7) Cervicoplexy—for congenital prolapse
- (8) 'All in one' for prolapse of uterus, evaluation of—
- (9) Median Exenteration by original abdomino-perineal route for early cancer of cervix

આ ઉપરાંત છેલ્લાં વર્ષોનાં જે પ્રકાશન થયાં છે તેની યાદી નીચે મુજબ છે:

1. Incidence of Rh incompatibility in married couples of Gujarat and its role in the production of abortions, still-births and neonatal disease. (Research sponsored by Gujarat University) Ind. Pract., 9, 469, 1956
2. Pregnancy Anaemia in Gujarati women (Sponsored by Gujarat University) 'Vidya', Jour. of Guj. University, 1, 47, 1957
3. A study of Haemorrhagic Diathesis (Sponsored by Gujarat University) Ind. Pract., 14, 899, 1961
4. Carcinoma of Gall Bladder without cholelithiasis. J. I. M. A., XXIV, 515, 1955
5. Haemodynamic problem of the failing heart. Ind. Pract. 8, 629, 1955
6. Antibiotic action and bacterial resistance G.&S. Med. Bulletin, 1, 22, 1955
7. Tuberculous ulcer of the stomach. Ind. Pract., 8, 309, 1955
8. Laboratory control of Diabetes Mellitus. Punj. Med. Jour., V, 261, 1956
9. Intestinal Helminths. G. & S. Med. Bull., 1, 19, 1956
10. Bacterial Reaction to Antibiotics. Ind. Pract., 9, 1956
11. Indigenous Kalaazar. Ind. Pract, 10, 1957
12. Modern Pathology in American Teaching Hospital. G. & S., Med. Bull. 1, 157, 1958
13. Carcinoma of the Ampulla of Vater (In press)
14. Serum Proteins in Surgical Tuberculosis
(Sponsored by Gujarat University, To be published)
15. Serum Transaminase in Renal Disease (Sponsored by Gujarat University, To be published)
16. Glucose Threshold mechanism in Diabetes Mellitus and its relation to renal dysfunction (Sponsored by Gujarat University, Under investigation)
17. Electrophoretic pattern of serum proteins in antenatal state of Gujarati women (Sponsored by Gujarat University, Under investigation)

સાથે સાથે અતુરનાતક વિદ્યાર્થીઓ Dissertation માટે મહેનત કરી સામગ્રી એકઠી કરે છે એનો ઉદ્દેશ્ય કરવો ધટે, કારણ કે આમાં સંસ્થાની Follow-upની પ્રવૃત્તિ આવી જાય છે.

Medical

1. Cardiovascular System in severe Anaemia, Dr. C. S. Joshipura
2. Genesis of Anaemia of hook-worm disease, Dr. H. C. Barbhaiya
3. Byssinosis, Dr. P. S. Kulkarni
4. The Haemorrhagic Disorders, Dr. K. P. Jetly
5. Observations on infectious hepatitis, Dr. K. B. Patil
6. Value of stella to Ganglion block in cerebro vascular catastrophies,
Dr. Y. P. Dessi
7. Observation on the use of prednisolone in enteric fever, D. H. D. Joshi

8. Initial control on hypertension, Dr. B. J. Patel
9. Tetanus, Dr. M. H. Shah
10. Aetiology of congestive cardiac failure, Dr. K. L. Shah
11. S. G. O. T. in Liver diseases, Dr. B. J. Vasa
12. Heart and Circulation, Dr. S. G. Munshi
13. Electrophoretic patterns of serum proteins in ankylostomiasis,
Dr. G. G. Oza
14. Cor Pulmonale, Dr. M. D. Nanavati
15. Heart Diseases, Dr. L. J. Shah
16. Incidence of Cobra in the District of Banaskantha with special reference
to treatment, Dr. K. L. Kothari
17. Use of Hydrochlorothiazide in the initial control of uncomplicated, un-
treated essential hypertension, Dr. J. M. Nanavati

Surgery

18. Bone Grafting, Dr. A. B. Patel
19. Observation on Tuberculosis of Hip, Dr. A. B. Mehta
20. The treatment of Tuberculosis of Spine, Dr. P. R. Thakore
21. Intramedullary Nailing, Dr. R. M. Desai
22. Fractures around the elbow, Dr. B. P. Shah
23. Peptic Perforation, Dr. D. D. Patel
24. Osteoclastoma of Bone, Dr. S. A. Trivedi
25. Splenectomy, Dr. P. C. Patel
26. Observation on Gall Bladder Surgery, Dr. Mahesh C. Desai
27. Treatment of Fractures Neck Femur, Dr. P. K. Shah
28. Stone in Urinary Tract, Dr. S. N. Shah
29. Carcinoma of Tongue, Dr. P. J. Tripathi
30. Surgical Treatment of Thyroid Swelling, Dr. P. M. Desai
31. The Carcinoma of Oesophagus, Dr. C. B. Bhargava
32. Clinical Review of Delayed and non-union, of Fractures, Dr. M. D.
Pathak
33. Giant Cell Tumour of Bone, Dr. J. C. Patel
34. Carcinoma of Breast and its Treatment, Dr. B. R. Patel
35. Partial Synovectomy in Chronic Synovitis of the Knee joint,
Dr. P. N. Kharod
36. Primary Tumours of the jaws, Dr. R. B. Tambe
37. Partial Gastrectomy in the Treatment of Peptic Ulcer, Dr. D. P. Ghosh
38. Intestinal Tuberculosis, Dr. C. M. Gajjar

Gynaec

39. Ectopic Gestation, Dr. B. J. Surati
40. Ante Partum, Dr. Kala B. Parikh

41. Ectopic Gestation, Dr. J. H. Gandhi
42. Placenta Previa, Dr. S. R. Parikh
43. Rupture of the Uterus as obstetric complications, Dr. S. R. Parghi
44. Caesarean Section, Dr. Nirmala C. Amin
45. Caesarean Section, Dr. Kala N. Amin
46. Genital Prolapse, Dr. Kalindi M. Dave
47. Fibro Uterus, Dr. A. M. Shah
49. Caesarean Section, Dr. Kala S. Parikh
50. Functional Uterine Haemorrhage, Dr. R. N. Banker
51. Pelvic Inflammation, Dr. K. T. Shah
52. Glutamic Acid, Dr. V. M. Mehta
53. Ovarian Tumours, Dr. M. D. Surti
54. Prolapse of the Uterus, Dr. K. C. Gadariya
55. Heart Disease in Pregnancy, Dr. A. Rao
56. Intravenous Pitocin drip in Obstetrics, Dr. S. R. Rajguru
57. A study of nature of deliveries following previous caesarean section,
Dr. N. M. Patel
58. Rupture of the Uterus, Dr. R. N. Trivedi
59. Meperiding Hydrochloride (U. S. A.) (Pethidine) Hydroxyzine Hydrochloride (Atarax) & Chlorpromazine (Largactil) in labour. Dr. K. K. Shah
60. Benign Trophoblastic Growths, Dr. S. K. Shah

પરંતુ સંશોધન સંસ્થાઓને એનાથી સંતોષ નહિ થાય એ સ્વાભાવિક છે. આનાથી આગળ જવું હોય, એકસપેરિમેન્ટલ સ્ટડીઝ આગળ ધપાવવા હોય તો, અમે પોસ્ટ-ગ્રેજ્યુએટ મેડિકલ સ્કૂલમાં ક્યું છે તેવા પ્રકારનો જુદો વિભાગ શરૂ કરવો જોઈએ. આ વિભાગમાં મુખ્યત્વે ગ્રાણીઓ ઉપર પ્રયોગો થતા હોય છે એટલે એને રાખવા માટે, પાળવા માટે, સાચવવા માટે, ઓપરેશન માટે સારો સરખો ખર્ચ કરવો પડે છે. મેડિકલ સ્ટાફ પણ વધારાનો જોઈએ, કારણ કે વિષયમાં રસ હોય એ ન ચાલે, સમય પણ જોઈએ. આવો અલગ વિભાગ ચલાવવામાં બીજો પણ ફાયદો દેખાયો છે અને એ વિદ્યાર્થીઓમાં એ વિષયમાં રુચિ ઉત્પન્ન થવાનો. એક કામ પ્રત્યક્ષ થતું જોવામાં આવે. જાતે કરવાનો પ્રસંગ સાંપડે. તો એમાં અભિરુચિ ફળવાય એ સ્વાભાવિક છે. અને એક દિવસ જો પોતામાં એવી શક્તિ ભરી હોય તો ખીલી નીકળે, અભિવ્યક્ત પણ થઈ શકે.

ગુજરાતમાં હવે ત્રણ મેડિકલ કોલેજ ચાલુ થઈ, ચોથી આવતે વર્ષે થશે, પાંચમી એકાદ વર્ષ પછી સંભવ છે કે ગુજરાતની વસ્તીના પ્રમાણમાં, મેડિકલ એડમિશન્સની બાબતમાં, આપણો પ્રાંત દેશમાં મોખરે આવી બેસે.

તબીબી શિક્ષણની સાથે સાથે ગુજરાતમાં સર્જરીના ક્ષેત્રમાં પણ આજકાલ ભારે પ્રગતિ થઈ છે. સારા સર્જનો ફક્ત મેડિકલ કોલેજમાં જ હોય એવું રહ્યું નથી. લાગ્યેજ કોઈ એવો હશે કે જ્યાં સિવિલ સર્જન સર્જન નહિ હોય. ખાનગી ક્ષેત્રે પણ સખ્યાબંધ નર્સિંગ હોમ નીકળવા લાગ્યાં છે અને એ જ રીતે ખાતી કેટલીયે હોસ્પિટલો જ્યાં ને ત્યાં નીકળી છે.

તખીજી ક્ષેત્રમાં સ્વાતંત્ર્ય આવ્યા પછી આવેલા આ જુવાળનો સંશોધન ક્ષેત્રે પણ લાલ લેવાનો જોઈએ.

હવે શિખવાડતી હોસ્પિટલોમાં પૂરા સમયના સ્ટાફની પ્રથા પણ દાખલ થવા લાગી છે એટલે સમયના અભાવનું બહાનું પણ નહિ રહે. હવે જોઈએ છે કાર્યકર્તાઓમાં ઉત્સાહ અને સરકાર અને યુનિવર્સિટી તરફથી ઉત્તેજન.

સંશોધનની અગત્ય તો દરેક સમજે છે, વાતો પણ થાય છે, પરંતુ જે જાતનું ઉત્તેજન કે મદદ સરકાર તરફથી કે યુનિવર્સિટી તરફથી મળવાં જોઈ એ તે પ્રકારનાં મળતાં નથી એ હકીકત છે. સર્જિકલ રિસર્ચ એ ખર્ચાળ વસ્તુ છે. એને ફાર્માસ્યુટિકલ રિસર્ચ, કેમિકલ રિસર્ચ કે પેથોલોજિકલ રિસર્ચ સાથે સરખાવી નહિ શકાય.

ખીજી પણ એક વાત આવી સરખાવો. ચલાવનારે કે સરકારે સમજી લેવી ઘટે સંશોધક-વૃત્તિ દરેક અધ્યાપકમાં હોવી જોઈએ એમ કહેવું ઠીક છે, પરંતુ અનુભવ જુદું શીખવે છે. સર્જરીમાં ટેકનિક, શિક્ષણ અને સંશોધન એ ત્રણે વૃત્તિઓ છે. એ ત્રણે એક જ વ્યક્તિમાં કવચિત્ માલુમ પડે છે. એટલે કે સારો શિક્ષક સારો ટેકનિશ્યન હોય, પણ બાગરેજ સાથે સાથે સારો સંશોધક હોય છે, અને એ જ રીતે સારો સંશોધક શિક્ષણકાર્યમાં ઘણી વખત નિષ્ફળ નીવડેલો માલુમ પડે છે.

પરંતુ આપણી સરકાર અને સચાલક સંસ્થાઓ ઘણી વખત ફક્ત આ ત્રણ જ નહિ, ચોથી શક્તિની પણ એક જ વ્યક્તિમાં અપેક્ષા રાખે છે અને એ એડમિનિસ્ટ્રેશનની-વહીવટી શક્તિની ! પરિણામમાં નાસીપાસી નિષ્પન્ન થાય એમાં કાનો દોષ કાઢવો ?

આજકાલ તાજા કે જીવતા પ્રાણીનું એક અંગ કે અવયવ કાઢી ખીજી જીવતા પ્રાણીમાં જોડી દેવાનું-સર્જિસ્ટીયુશન કે રિપ્લેશમેન્ટ-નામે ઓળખાતું રિસર્ચ-સર્જરીમાં થઈ રહ્યું છે. આ બહુ વિશાળ કાર્ય છે, છતાં ઉપયોગી હોવાથી કરવું રહ્યું. એને માટે એનિમલ હાઉસ અને સાધન સામગ્રી તો જોઈશે, પરંતુ સાથે સાથે બિલકુલ અલગ, ફક્ત રિસર્ચ કરનારા, ચૂંટી કાઢેલા સર્જનો પણ જોઈશે. આ બધું પણ મળી રહે, જે એની અગત્ય સમજાય તો.

આ અગત્યનો વિષય છે, એમાં ઉત્તેજનની જરૂર છે, એટલું કહેવા અને એના ઉપર ભાર મૂકવા હું આપની આગળ ઉપસ્થિત થયો છું.

HEALTH SECTION

The section on the Public Health was presided over by Dr. T. B. Patel, the eminent doctor who as the Director of Health and Medical Services (Gujarat State) combines in his new office both the branches. In his sectional presidential address he explained how the control of diseases was attempted and how the State provided a vast field for undertaking community based research for dealing with the health programme of Gujarat. Mr P. G. Shah, president of the Society and Dr. D. N. Pai (K. E. M. Hospital Bombay) both took part in the discussions along with other doctors.

Fourth Conference of Research Workers for Gujarat Health Section : Presidential Address : 21st Oct., 1962

HEALTH PROBLEMS OF GUJARAT STATE THE SCOPE OF RESEARCH IN THEIR PLANNING, EXECUTION AND ASSESSMENT

Dr. T. B. Patel.

**Director of Health & Medical Services
Gujarat State, Ahmedabad**

**"The Health of the people is really the foundation upon which all
their happiness and their powers as a State Depend".**

"Disraeli"

The State of Gujarat has an area of 72,137 square miles with a population of 20,612,285; of this 49 lakhs people reside in scheduled areas.

I. TUBERCULOSIS :

The incidence of Tuberculosis is very high in the State. Although no systematic and accurate surveys have been done in this connection in the State, the Tuberculin testing (Mantoux test) carried out during mass BCG. vaccination campaign in the State has given some indication about the high prevalence of T. B. infection in the Community.

T. B. Survey undertaken under the National Central Survey Programme has revealed prevalence rate for active and probably active tuberculosis cases varying from 18 to 20 per 1000 in different States.

There are about 20,000 annual deaths reported from Tuberculosis in the State, while the actual number of deaths is likely to be about 40,000.

On the basis of 1961 population it is estimated that there are about 3 to 4 lakhs people suffering from T. B. in State of which about 1 lakh would be sputum positive cases.

It is proposed to reorganise the T. B. services in the State in co-operation with the Voluntary Organisations and local authorities so as to give the best results. Due consideration will be given in this to modern trends in T. B. control measures which have been brought out in various recommendations of the Expert T. B. Committees and the Bangalore T. B. Centre Seminar.

The incidence of T. B. infection is particularly high in certain urban areas like Ahmedabad Town, where small surveys in specific groups have indicated an infection rate of 4 to 5 per cent (in the industrial). With the industrialisation going on at a rapid pace in the country and in the State the disease is likely to assume serious proportions in the Community. Labour population and lower middle class groups in the town are specially found to be highly infected due to physically impoverished condition from mal and undernourishment, gross overcrowding in the houses and long hours of work in closed spaces. Besides as most of the labour population in the Towns is drawn from the rural areas infection soon spreads to the villages as workers on getting infected return back to their home in villages there being no means to support themselves in the Towns.

Important problems for research in respect of T. B. can be as follows —

1. Since local conditions differ in various states there is a need for carrying out epidemiological appraisal of :
 - (a) Socio-economic factors on the incidence of T. B. in childhood, population,
 - and (b) in young age groups. Similarly the studies on the methodology of control measures to suit local areas will also be useful.
2. Standardization treatment procedures with a view to avoid development of bacteriological resistance and to make treatment with chemotherapeutic drugs comparatively cheap.
3. To assess the prevalence of bacterial resistance in Community in view of indiscriminate use of anti-tuberculosis drugs.
4. To study and review the benefits of mass BCG. vaccination campaign and its protecting effect on the incidence of T. B.

II. MALARIA AND FILARIA :

Malaria and Filaria which are mosquito borne diseases are also important problems in the State. Malaria has already been controlled and is now rapidly reaching the stage where, it will not only cease to be the public health problem but will also entirely disappear from the State in a period of time perhaps at the end of the present five year plan.

Filaria in contrast to the above is a major problem in the State affecting a large population groups covering practically the whole coastal area in Saurashtra, Surat Town, and coastal area of the Surat District which comes to about 2.5 millions. It is also slowly spreading in the

interior, affecting many adjoining towns where due to the absence of faulty drainage system, profuse mosquito breeding continues throughout the year, creating conditions favourable for Filaria infection in the Community. In fact towns like Amreli are showing 2% infection in human beings indicating that the area has been perhaps newly infected during the recent years. Similarly Ahmedabad is showing 1.6% Filaria infection in mosquitoes although so far no evidence of the infection has been detected in human beings, though there is a strong belief that infection exists in human being in view of the presence of filarial parasites in the local mosquito population. This problem would need all the efforts both on the part of the State as well as local authorities for its successful control in view of the fact that the method (particularly insecticides spraying) which has been found to be so effective in controlling and in eradicating Malaria, has not proved to be of much value in Filaria control. Hence main stress has to be laid in controlling this disease on (1) eliminating breeding places of culicine mosquitoes by provision of proper drainage system & improved methods of waste water disposal and (2) on carrying out systematic treatment of all those detected to be harbouring filarial parasites in their blood, by making systematic blood examination and providing free facilities for blood examination at as many of the Medical Institutions in the filariasis zone where simultaneous treatment could be freely given at the earlier stage

The establishment of Filaria Clinics in large towns in the affected zone will also be an important measures in that direction. There is need for research in devising effective and safe treatment schedules of specific drugs, their trial use and assessment in controlling filarial infection. There is also ample scope for research in (1) the clinical and immunological aspects of the disease, (2) in studying the environmental conditions and other factors which favour transmission from one to the other (viz from mosquito to man and vice versa) and (3) in undertaking field observations to study evolution of the disease both in mosquito and man.

III. LEPROSY :

Leprosy is also a fairly important problem in some parts of the State, mainly prevailing in areas of districts of South Gujarat which are contiguous to the leprosy affected areas of Maharashtra State. Leprosy infection is also found in small pockets in the Adivasi areas and backward areas in certain districts like Sabarkantha, Banaskantha and also in areas of Junagadh District. A detailed systematic survey of the problem

has not so far been carried out although the rapid sample survey carried out has given infection rate as below :

Statement showing the Leprosy incidence in Gujarat State:

District	Incidence Per 1000
1. Surat	5.31
2. Dangs	4.00
3. Broach	5.00
4. Baroda	4.78
5. Panchmahals	2.00
6. Ahmedabad	0.50
7. Kaira	0.50
8. Mehsana	0.50
9. Sabarkantha	0.50
10. Banaskantha	0.50
11. Amreli	0.50
12. Jamnagar	0.50
13. Rajkot	0.50
14. Surendranagar	0.50
15. Bhavnagar	0.50
16. Junagadh	2.00
17. Kutch	0.50

There is a good scope for undertaking field research into the problem of leprosy infectivity as well as varying low prevalence of the disease in certain area by carrying-out surveys not only from the point of disease prevalence but also from the angle of socio-economic conditions as well as cultural patterns prevailing in the area which might throw some light as to why the disease has been generally found to be absent or having low prevalence in some parts of the State.

IV- VENEREAL DISEASES INFECTION :

In the tribal and backward areas of the State, as well as in certain towns prevalence of V. D has been found to be very high as revealed by the recent surveys carried out in Baroda Town (4 to 6 %) and in Dangs district area (figures 6 to 19%) as well as in Sabarkantha District.

V. TETANUS :

Similarly the problem of prevention and treatment of Tetanus needs attention. The study of the incidence in rural areas as well as in Towns

due to varying local and environmental socio-economic conditions requires to be taken up, so that effective measures for its control by way of systematic immunisation of susceptible age groups and other methods as well as standard cheap methods of treatment could be devised. It is surprising to note that there is very scanty material available in regard to its prevalence and other epidemiological data, eventhough none of the Medical Officers, working in town and rural areas must have failed to come across some Tetanus cases in their daily practice. It is tragic to note that not much has been done for preventing Tetanus which causes lot of anxiety of suffering, eventhough we possess the most powerful weapon against it in the inoculation against Tetanus similar in effectiveness to that of Smallpox vaccination.

VI. RABIS :

Rabies is another disease which has become a problem in many parts of the State both in rural and urban areas. Need for devising special methods of Health Education to remove social prejudices from the people in tackling this problem needs attention.

VII. TRACHOMA AND EYE DISEASE :

There is also high prevalence of diseases of eye particularly trachoma in the State, particularly in the areas of North Gujarat, Saurashtra and Kutch.

District	Trachoma Disease Percentage
1. Ahmedabad	59.6
2. Amreli	72.2
3. Broach	54.1
4. Banaskantha	79.1
5. Baroda	44.9
6. Dangs	11.4
7. Gohilwad	72.5
8. Jamnagar	56.6
9. Kaira	59.2
10. Kutch	57.5
11. Rajkot	58.8
12. Mehsana	68.7
13. Panchmahals	45.2
14. Sabarkantha	48.4
15. Sorath	55.7
16. Surat	41.3
17. Zalarwad	67.9
Total average	56.0

Due to its affecting younger age groups it becomes a fruitful source of impaired vision, or even blindness in the Community (a) Economically Blind 0.27% and (b) Impairment of vision 1.7%

VIII. STONE INFECTION :

Another condition for investigation from many angles including pathological as well as social, economic, nutritional and environmental factors is the prevalence of lithiasis of urinary tract particularly vesicular calculus (stone in the bladder), which is found in the region of North Gujarat, Kutch and Saurashtra.

IX. WORM INFECTION :

There is also a large amount of prevalence of **helminthic infection** (worm infection) in the Community particularly in the younger age groups, (eg 40 to 60%). Similarly there is also a wide scale prevalence of **diarrhoea, dysentery** and **enteric group of infection** both in urban and rural areas suggesting need for intensive methods of improving environmental sanitation as well as attention to personal cleanliness by undertaking concentrated health education programmes suitable for different age groups and providing facilities in regard to safe water supply, and excreta and other waste disposal for the Community. This will be indeed a major health problem having extensive scope of research from many aspects including epidemiological studies as well as administrative and other technical procedures in controlling them.

X. NUTRITIONAL DEFICIENCY :

Problem of Nutrition and Nutritional deficiency diseases is another extensive public health problem in the State. It has special importance in regard to pre-school and school child. Though no detailed surveys have been carried out, those undertaken in a few areas have revealed that gross amount of malnutrition in the child population, particularly protein deficiency and vitamin A deficiency has been found to be widely prevalent.

XI. HEALTH OF SCHOOL AND COLLEGE STUDENTS :

Here one can not help observing about low standard of physique found in both school children as well as college students which requires

special attention of University and other educational authorities to carry out investigations as well as to devise measures, so that the strong healthy community of young people could be brought-up in the State.

In one district viz. Panchmahals pellagra has been observed. This condition has been found to be prevailing in an increasing no of persons in the District, during the years of scarcity and near famine conditions in that district. This could be an important problem for nutritional research

The other problems in the State like proper treatment and disposal of industrial wastes, hazards to water sources from indiscriminate disposal from factories and towns are also worth attention

XII. POPULATION PROBLEM :

The last but one of the most important and urgent problem is that of control of population. The problem is of special importance in that the rate of population growth has been observed to be very high (as revealed from the recent Census figures) to vary from district to district and in all districts the rate is well above the national average of 2.1 percent.

The district-wise growth rates for our State are as under :

District	Percentage Increase Per Year
1. Jamnagar	3.4
2. Rajkot	3.0
3. Bhavnagar	2.6
4. Surendranagar	3.1
5. Amreli	2.4
6. Junagadh	2.6
7. Kutch	2.3
8. Banaskantha	3.4
9. Sabarkantha	3.4
10. Mehsana	2.1
11. Ahmedabad	3.3
12. Kaira	2.2
13. Panchmahals	3.0
14. Baroda	2.6
15. Broach	2.4
16. Surat	2.3
17. Dangs	5.1

CONCLUSION

Thus there is ample scope for research both in regard to methods of executing programmes as well as carrying out fundamental biological research into various aspects of fertility and conception control methods. Pressures of various types such as economic, cultural, educational as well as the impact of modern technological revolution and urbanisation have resulted, in changing attitudes on the part of different community groups in regard to the acceptance and adoption of family planning measures. How these pressures act and how can they be modified to increase the acceptability index of people etc. could be a very fertile ground for research activities. These researches would provide us with data having bearing on over-all health concepts and planning. It will be seen that there is a vast field for undertaking what may be called 'Community based research'-in the State as briefly stated above.

All these problems are definitely capable of solution and have been successfully in most of the advanced western countries.

PROBLEMS FOR RESEARCH IN HEALTH IN RURAL AND SMALL URBAN AREAS

Dr. A. K. Niyogi, Baroda

Most causes of loss of health are multifactorial. Epidemiological studies of the health of the people involve studies of all factors that determine it i.e. factors of the host, of the agent and of the environment. Preventive efforts are based on such studies and are directed towards corrections of the specific factors that tend to affect health. Considering the health of our population, of those living in the villages and in small towns, it is seen that although in many cases epidemiological studies have been able to point out the factors responsible for the loss of health, it has not been possible to remove many of such causes as lying in the physical environment for want of information on how to act to remove them. To all who have to move in villages and small towns, this comes out too truly and more so if they are to guide that personal—the sanitarian—to whose sphere of activity comes at the first instance the training of the public in corrections of defects of the environment. Thus, where success is expected comes disappointment. Nevertheless one can believe that human ingenuity has no limit and one day it will be possible to overcome the obstacles if proper efforts are made to find out the means.

Water supply

The problems of water supply come up first in our mind. In the villages many of the wells are dug by the side of tanks or streams with a few feet of earth separating them. The built of the wells are usually such as is unable to filter the microbial population that seeps in through the earth and pollute well water. Whereas a few bacteria in a thousand gallons of water may be so dispersed as to reduce its chance of causing infections to one individual, it has to be appreciated that a whole village has often have to depend on one or two wells for the supply of drinking, cooking and utensil washing water and thus the chance of causing infection gets multiplied in proportion to the number of villagers using the well. We have therefore to make the water in the well safe so that this risk is reduced to nil practically. Indeed considering water supply we can accept the principle that that water is safe which is purposely made safe and is tested and found to be safe.

As a step towards fulfilling needs for water supply small water works have been built. Many more are coming up. In all these water is pumped by electrical motors and then it is supplied by pipe. Usually no chlorinating arrangement is made, though any consideration of the sources will show the suspicious character of its water. Possibly this is due to high cost of putting up the constructions for chlorination as well as its running cost. A cheap and effective chlorinator is needed to be involved. One which will work inspite of the rough

handling that one can expect from a Panchayat servant. It is best to develop an automatic chlorinator which will work with bleaching powder solution, without developing faults easily or getting checked.

It is known that any automatic chlorinator will fail unless the adjusted dose of chlorine can give a residual value as one would decide. Automatic chlorination is impossible unless manganese, iron and the oxidisable organic matters in water are brought to a minimum standard level. One way to achieve this is to settle and filter the water properly. Filters at present are costly and the running cost of rapid sand filter is too heavy and again it needs quite good technical supervision. Here is the need for finding out means to get a constant quality water and investigations are needed in this line also. In the absence of these two facilities, the water works will continue to fail to supply safe water. They will be labour saving devices rather than good instruments of health.

About water in wells where pumps are not fitted, one problem is about testing for bacteriological purity of their water. The first difficulty comes in collection of water from these sources without bacterial contamination of the sample by the sampler himself and from the materials that are used. The present methods of collection in bottles usually available from Public Health Laboratories to which threads have to be tied etc. are cumbersome and only a bacteriologist can hope to avoid contamination. It is futile to expect bacteriologists in sufficient numbers to be made available for collection of samples from the different localities. It is therefore necessary to invent sample collector for bacteriological analysis with which the sanitarian or even a Panchayat servant can collect water without causing contamination.

The second problem in connection with water testing is the transport of water for bacteriological analysis. It is well known that bacterial population begins to change on collection in a sampling bottle unless bacteriostatic condition is provided to prevent it. It is a rule that collected water must reach the Public Health Laboratories within 6 hours of collection. A bacteriostatic condition is provided by cooling with ice. But we cannot have ice in every village nor can we reduce the time interval to the minimum when villages are away from the town where the Public Health Laboratory is situated. In the face of these two problems set above, it will be seen that it is often difficult to take advantage of bacteriological analysis of water of determining its safe character, be it from a source with a pump or without it.

Disposal of Human Waste

Second problem about physical environment is disposal of human waste. Many are the types of latrines that have been invented, but on an appraisal it will be seen that none fulfil all the criteria of a good latrine viz. no breeding of flies, no exposure of faeces, no pollution of surface soil or water or subsoil water, no smell, no handling of night soil before the pathogens are dead, low

cost, universal adaptability by the people and availability of manure. Practically there are two types which compete in the rural and small town areas : one is well latrine, so well-known to the people for centuries and the other is aqua privy. There are modifications of these two, but basically these represent the two groups—one where the sludge does not need removal for 40 to 50 years or cannot be removed and the other where it needs removal every 3 or 4 years. In the highly congested situation which is the rule rather than the exception in our villages, the latter i. e. the aqua privy group appears to be more feasible than the other one. But it has got several defects. The cost of the original type of aqua privy is about Rs. 350 or more, while modification has been made to bring it down to Rs 250 a figure which is still too high. One of the modifications is to abolish the second chamber and replace it by a deep soakage pit with uncemented brick wall and a " kutchha " floor. It is not yet known how much ultimately it is going to be helpful. Seweage sickness of the soil is bound to develop, and dampness also may eventually increase in the surrounding soil and even spread to the floor of the house adjacent to which the latrines have to be made. One day the sludge will have to be removed, semiliquid at this stage and will be infactive. There are other problems also. Should the pan be of concrete, earthen ware or porcelain, what should be its length and its slope, what should be the dimensions of its water trap, is it needed to use a water trap at all ? In the original type of the aqua privies disposal of the final effluent coming out of the second chamber is a head-ache. Where is it to go ? A soak pit and subsoil drains are liable to flood in rains, gardening with this effluent for growing vegetables, fruits, and even flowers is out of consideration for bacterial contamination. A well to dispose it is costly and will contaminate subsoil water. Continuous automatic chlorination is beyond our means. Over and above there are not sufficient space in many village homes for disposal of the effluent by any of these means or even to construct these latrines.

The fact is that we have not as yet found the ideal instrument for disposal of human waste, though we hope that if efforts are made solutions will be available some day.

Atmospheric Pollution

The next problem is about atmospheric pollution at homes. This pollution comes from dust microorganisms, smoke and fume. Dust by themselves can be harmful but much more are the microorganisms let loose in dust and air and protected by the dust against such lethal agents as sunlight. These bacteria are usually from human sources, there are only a few whose natural habitate is the earth. The source of the largest amount of dust are the floors and walls of the houses. In villages and small towns almost all the houses have earthen floor, and a good deal of effort on the part of the village women has to be made at least once a week to stabilise the floor and the walls. The

mud floors also become damp in the rainy season making them more unhygienic. Then there are the rats and the arthropods seeking shelter in the earth floor which also effect personal cleanliness.

Is it not possible to have some means for stabilising the earthen floors and walls and making them damp proof by methods that will be cheaper, more easily available and less costly than cement, so that the dustiness is reduced, dampness is no longer there and the rats and insects cannot harbour themselves? Experiments done in this line have not been successful in the past, but who knows that if further efforts are made they will not have a better fate?

Atmospheric Pollution by Smoke

The next problem is about atmospheric pollution at home by smoke. The oven is the chief source of smoke in the house making it dirty, making clothes dirty and harming the people. The usual fuel in the oven is wood. In houses of a very small minority, kerosene oil is used in pressure stoves or in safety stoves as fuel. In addition to the smoke from fuel there are the vegetable oils used in cooking and frying and the oil from spices etc., which come up as fume. It is known that mineral oils, wood, animal fat, most of the vegetable oils and mineral coal on incomplete combustion produces carcinogen as Pyrene, benz-pyrene, and chrysene. One need not look to carcinogens only as harmful substances. Irritant like ammonia, sulphur dioxide, mineral acids etc. are also known to be present in smoke. Further the recent studies by follow up of the people exposed to smog in Donora several years back when atmospheric inversion occurred there showed that not only the people exposed in Donora have higher death rate due to carcinoma but also due to cardiovascular diseases and other diseases. Evidently atmospheric pollution and exposure of the people to it reduced their resistance to illnesses in more ways than what can easily be understood by exposure to carcinogen. Cooking and other work in the household with the "Choola" lasts several hours and the exposure to harmful air conditions occur all the time to the cook which includes all the adult women in the families excepting those who can afford to get somebody else to cook for them.

Good ovens for burning mineral coal or wood are available, but they are too costly. They produce smoke from the fuel, but the smoke goes out through chimneys leaving the fumes from the cooking oil etc., in the kitchen atmosphere. A very cheap type of oven where the smoke is led out by a chimney which is at present popularised is not efficient due to loss of heat and due to some of the smoke rebounding inside the oven and entering the kitchen air. Pressure stoves are good, but it is a fact most of the people heat the burners by setting fire to kerosene oil in a rag which produces a lot of smoke. It is efficient as regards consumption of fuel and time, but one does

not know how much safe are the products of combustion of its vapourised kerosene oil which though vapourised is still kerosene oil. One has also to remember how much uncommonly lethal an instrument it is by producing severe burns, its cost, the difficulty of efficiently running it and above all ignorance about the products of combustion kerosene oil. Recent papers show that complete combustion of diesel oil does not produce any of the known carcinogen, but there is no information about kerosene oil. The safety stove are not so safe as their names indicate. There is no safety stove available in the country which will not produce a lot of smoke if its flame touches the cool undersurface of a pan, if air blows on it and which has not always a bit of wick that will always smoke. Evidently we have not got a cooking oven that can assure safety to the women at home, and research is needed in this line.

Tremendous Heat

No less inimical to the health of the people is the tremendous heat that is prevalent in this part of the country. Apart from the direct effect of heat like heat hyperpyrexia, heat exhaustion, heat cramps, and prickly heat, the indirect effects on our mental and physical capacity are heavy and universal. In our country effective temperature of the atmosphere is higher than the comfort zone of about 78° F of Air temperature with a still air and hundred percent relative humidity for 8 months of the year or more. The fact that we work less than similarly placed persons in the colder countries is partly due to severe heat here. The working shades or the living buildings are often made looking to the strength of material and the cost, but almost never considering the mental and physical needs of the occupants. In the villages the routine material is often country tiles and corrugated iron sheets and the walls are of mud or mud and bricks, no ceiling is usually made. There is no difference in the heat transmittance co-efficient of C. I. sheets, clay tiles and asbestos sheets. A 4½" brick wall and 3" reinforced concrete is somewhat an improvement over the former as regards heat transmission. Since it is known that these materials fail to bring down effective temperature to the comfort zone as they are used to-day, we have to consider that for maintaining health of the inmates are they the best material or are our traditional methods for construction of buildings and sheds the best? Is it not possible to improve the construction and material so that the mental and physical efficiency of the people are less effected by heat? Is it possible to adopt a ceiling under the roof, which will provide a dead air space between the roof and ceiling for acting as good insulation? Is the present tendency to make 4½" brick wall and 9' high roof good for tropical living? Is it healthy to provide too much light and heat with big glass windows in this country, simply because it is essential in a country at a much northern latitude? Is it sufficiently useful to provide sun breaker on the north and east

of living-rooms ? Are the sun breakers more efficient for preventing heat and glare than the old "Jali work" in stone set in spacious verandas ? Incidentally I have not to say any word in Ahmedabad how beautiful the Jali work can be !

The fact is that we need more scientific informations for tropical living. What is available we acknowledge with gratefulness and put them in use wherever possible, but there are so many that are not available which comes in the ways of the efforts by the public body, the public and the public health department to adopt or advise on healthful living in small towns and villages. Problems like the above are many small—and not showing—perhaps not appealing to the unoriented mind, but nevertheless they have mass effect and are of great value to the health of the community. My appeal is to the Engineers to think of the smaller things of mass application in our small towns and villages where 80% population are living.

A SCHEME FOR EDUCATIONAL RECONSTRUCTION IN FREE INDIA

Principal K. S. Vakil, Bombay

I. Pre-Primary Education

(For Infants of 3 to 6 years)

through

Infant Schools or Infant classes, Nursery Schools, Montessori Schools, Kindergartens, Balamandirs, Shishumandirs, or the like.

With the aim of building up physique and health of infants and laying the foundation of their character by inculcating in them habits of personal cleanliness, clearness and gentleness in speech, orderliness in behaviour, sense of good manners, a co-operative spirit of ready give-and-take, of self-sacrifice and of consideration for others no less than for themselves, through physical exercise and free organised games, story-telling, action-songs, use of play-materials, pictures, and other visual education aids.

(Without any formal instruction in reading, writing, or counting)

II. Primary Education

(For Children of 7 to 11 years)

(Sts. I-V)

through

(i) Primary Schools imparting knowledge of mechanic of Reading, Writing and Arithmetic (the three R's); of local plants and trees and insects, birds and animals; and of their natural and social environment, and providing opportunities for hand and eye training and for the acquisition of manual skill by engaging in purposeful creative activities related to local occupations and industries, arts and crafts, such as spinning and weaving and vegetable gardening, mat-weaving and basket-making, and light wood-work and house-hold furniture making, with the aim of fitting them for useful and active citizenship; and ending with an Internal Primary School-leaving Examination in the subject of St. V, entitling the pupils passing it to admission straight-away to secondary schools, if admission to them is desired.

(ii) Evening or Night continuation Schools or Classes, providing facilities for the continuation of their education to pupils who for economic or other reasons, had to leave schools before completing their full Primary school course; held on Day School premises and conducted by Day School teachers encouraged to under-take Night School work by payment to them of an extra allowance.

III. Education (Sts. VI-XI) Post-Primary or Secondary

(For boys & girls of 12 to 15 years)

through

(i) Multi-lateral or Multi-Purpose Schools, offering, in addition to the present academic course of general cultural education, one or more alternative pre-

vocational courses of education suited to the future needs of pupils, such as a Commercial Course, an Industrial Course, a Domestic Science Course, an Art Course, a Primary-Teacher Training Course, a Pre-military Course, a Pre-medical Course, and a Nautical Course, and fitting the pupils for entry into trades, occupations and industries, arts and crafts, business and commerce, as well as for admission to academic, professional and technological courses of higher education at the University and to lower grades of the public service—ending with an Internal Secondary School-leaving Examination, held in each school by a committee consisting of the head of the school, the subject teachers concerned, local Government Inspecting Officer, and empowered to award Secondary School-Leaving Certificates to pupils passing it on the results of this examination and their cumulative school record—entitling those holding this certificate to admission to higher education courses at the University and to lower grade of the public service.

(ii) Evening or Night continuation Schools or Classes for continuation of their education by pupils compelled to leave school before completing their school course held on Day-school premises and conducted by Day-school work by payment of an extra night school allowance.

IV. University Education : For boys and girls of about 17 to 20 years, providing a three years course leading to the first Degree in Arts, Science, Agriculture, Commerce, Domestic Science, Fine Arts, Secondary-Teacher Training, Medicine, Engineering, Military and Strategy, and Navigation, and a further two or more years course of advanced study and research in the subjects studied for the first Degree.

V. Adult Education : Aiming at imparting Literacy and Civic or citizenship training to the large mass of the illiterate population of the States through Evening Classes and Night Schools.

VI. Community Training, through the organisation of educational and useful social welfare activities for all ages of people, regardless their economic status, religious affiliation, or racial differences.

Medium of Instruction :

(1) In the pre-primary and primary stage, the mother-tongue of the pupils or the Regional Language

(2) In the Secondary stage, the mother-tongue of the pupils or the Regional Language, with English associated with it in such subjects as Mathematics and Science.

(3) In the University stage, English.

SICKNESS AND HEALTH

Dr. Narendra H. Desai, Ahmedabad

Gujarat, alongwith the rest of India became aware of the vast problem of Sickness and Health facing us with the publication of the report of Bhore Committee. The problem was even more difficult due to the meagreness of the resources, but it was realized that with adequate planning much headway could be made. Even planners needed a good deal of thought and organization because of the vastness of country and population, illiteracy, superstition and the large incidence of ill health.

With the creation of Gujarat State, matters appeared even more difficult because initial paucity of finance. We can, however, state that because of proper planning and the developments of Health and Medical Services under able guidance, we have achieved a spectacular progress in the last ten years. The future, indeed, is bright.

We had, till about 15 years ago, in the Civil Hospital and B.J.M. School, only one teaching Hospital in the whole of Gujarat with an attached medical school for the training of doctors. Now we have already three teaching Hospitals and attached Medical Colleges and shall have one more next year and still another a year after. The teaching Hospitals are important in efficient medical care because not only they train doctors who are absolutely essential in any medical care programme but also undertake and promote research.

Specialization is necessary in all Sciences, and especially in Medicine due to the rapid strides of progress that are made and hence the teaching Hospitals have started developing full-fledged departments in various disciplines which should start working within a couple of years. I am referring to the Cardiothoracic, Neuorology, Burns and Plastic units which will soon materialise with all the advantages in Medical care and research that will accrue therefrom. The staffs of the various Hospitals have made important investigations on various problems the results of which are published in Medical Journals of repute. The subjects covered are various infections, Heart & Liver Diseases, therapy etc.

The total number of beds in Gujarat at the end of 1957 was 4,656 while today we have 6,257, an increase of 50%. We, of course, need many more beds according to the accepted standards of civilized countries, but we have moved in the right direction. Many new District Hospitals will come up in the 3rd and 4th plan with the object of providing a referral hospital in each district to which patients from rural areas could be referred. Five cottage hospitals were started in the 2nd plan.

Maternity units, the details of which will be given by subsequent speakers, are springing up from Govt., Municipal & Private resources all over Gujarat

Medical Teaching has naturally progressed and in Ahmedabad and Baroda facilities are available for training upto P.G. level in all the main branches of Medicine Jamnagar will soon follow suit, while Baroda is fortunate in having secured the collaboration of eminent professors from a distinguished medical school in the U.K. for P.G. training. The scheme is due to start from next year. Teachers as well as P.G. students from all over Gujarat will be able to take advantage of this scheme with ultimate benefit to the whole state.

Numbers of admissions to medical Colleges are also increased. So that, few, if any, who would like to receive medical training need go without it in the future. All the teaching Hospitals have at least one Professional Unit in the main branches of medicine so that the full time and energy of the teachers may be devoted to the problems of teachings and research Preventive and Social aspects of medicine are not neglected, for we have a full time unit dealing with that subject and as an additional measure of Child Care we shall soon have a Professional Unit in Paediatrics

ESIS. is another important development in furthering the medical aid, especially for industrial workers The scheme has been delayed in its implementation here though in other states smaller towns have already started it We have already made considerable strides in the implementation of the scheme for a no. of dispensaries are being built The ultimate desire is to cover each worker and his family and it is hoped that the scheme will commence next year. It is also hoped that it will be possible to include all the lower income group people, according to their income rather than type of work they do, into a uniform State Insurance Scheme in not too distant a future While we should take the good points of all the similar systems existing elsewhere, we hope that we will not slavishly follow any one but develop our system according to the needs of our own population We hope also that we will be free from the traditional and orthodox prejudices, bearing always in mind that the aim of the scheme is to promote and maintain the health of the population it covers and not just administrative conscience. In that it is proposed to have combined system of panel as well as whole time Doctor, each serving exclusively certain areas of the city Some of us feel that the prejudice against panel doctors is perhaps due to our having whole time servant in Govt. Dispensaries for many decades.

Many feel that panel system should be given a chance. We hope that with the two systems running parallel in the same town the merits and defects of each would be discovered and that system which is found to be efficient will be ultimately adopted for the whole city.

Eradication programme forms an important landmark in our progress and the State Govt. has launched a no. of programmes to eradicate diseases which have high mortality and morbidity. It is estimated that there were more than 4 millions per year of cases of Malaria in Gujarat ten years ago. In certain seasons at least one member in each house was suffering from Malaria. In those days 25 to 40% of industrial absenteeism was due to this disease and hence production was affected. The disease has been lessened—in some areas considerably (80-90)—due to the effort to control it and now that we have an eradication programme, we hope the disease will be completely eradicated in a few years, though those of us who know the nature of the disease and its problems will realize that there may be a few set backs before the aim could be fully achieved.

The concept of eradication of diseases emerged with a great force after the World wide experience of eradication and now we believe that all conceivable diseases can be eradicated given time, finance and technical assistance. Next of the list are programmes for the eradication of smallpox and trachoma—the former having already started so that we will be able to see the result in the next 5 years. Pilot scheme for trachoma eradication has also started

The State Government is also having programme for the eradication of a no. of other diseases e. g. B. C. G. Vaccination campaign for control of T. B. was organised few years ago and there are a few B. C. G. vaccination centres in various stations.

Eradication programme for small pox has already been started in our state and within two to three years the results of the campaign already started would be forthcoming in lesser no. of cases or deaths. Similarly Trachoma also pilot projects have already been started and I am sure within few years the highly endemic areas of our state would be covered up and this disease which is the foremost cause of blindness would disappear

The State Govt is also having programme for control of a no. of diseases which are very common and disabling. For Tuberculosis the B. C. G. vaccination campaign was organized before few years and now a few B. C. G. Vaccination centres are working. Over and above this there is a programme for establishing T. B. clinics, diagnostic and

treatment centres at number of places covering up all the districts. A T. B. training and demonstration center has been started at Ahmedabad where personnel for this expanded programme for T. B. control will be trained. The research at Madras has now resulted in the idea that Tuberculosis could be controlled by the domiciliary treatment at home and the State Govt. is taking up certain areas for domiciliary treatment and control. The beds for Tuberculosis patients are being increased and a no. of new T. B. Hospitals are coming up throughout the State.

Control Programmes for the Filariasis are started where ever these diseases are in evidence and we wish that the danger of Filariasis increasing in our State may recede and it may be controlled and finally eradicated. For Leprosy also S. E. T. units that is Survey, Education and Treatments have been working for a few years in the endemic areas and with the new social approach and new potent drugs available the incidence of this disease will be controlled. Work is also done in prevention of blindness in our State. For Cholera more stress is being laid on environmental sanitation and the third five year plan provides very sizeable sums for environmental sanitation specially for wholesome drinking water.

One of the most important advance, we have made in medical and health care is the development of Health Centers for the work in rural areas. For a very long time medical facilities have been more or less concentrated in big towns and cities and the rural population had hardly any thing. Most of the villages had no medical help and an occasional rare village had a subsidised Medical practitioner whose art and efficiency were very doubtful. Now with the opening of health centers and their sub-centers the rural population will get not only the medical aid but an integrated type of community care for all health and medical needs. By the end of third five year plan all over state the village population will be totally covered with the health centres and sub-centres—an achievement of which we can be proud. It will give general medical and surgical care to the patients of a quality higher than what would have been possible by a General Medical practitioner and will also give a no. of other services. These include maternal and child health and welfare services and family planning and indoor beds services to 6-10 people, clinical laboratory Health education services and all other public health activities including environmental sanitation, Immunization, School health, Nutrition advice etc. I would put Development of Health Centre services and Malaria eradication as the greatest of all advances we have made in our Country in last 10 years. In non-communicable diseases we find development of Diabetic clinic in all big hospitals and

Cardiac clinics are on their way. The gr̥eat need for a Cancer Hospital will be realised soon as the foundation stone for a Cancer hospital has already been laid in the Civil Hospital, Ahmedabad.

Research - With the Development of the teaching hospitals and new specialist department and with whole time department there is a sizeable activity for research work going on in the State. The Total amount of research work published by different persons and the variety of subjects undertaken for research projects is very extensive in our State and it would be difficult to ennumerate them. Specially the work is done at the three medical colleges and at the V. S Hospital at Ahmedabad. There are also research institutes for reasearch in Ayurvedic medicine and indigenous work at Jamanagar and at Surat. The B M Institute of Psychology and the Gujarat Research Society and Health Research Institute have also undertaken no of projects. The research work in our State is still young and I am sure that within a few more years a high tradition will develop and mature original work will come up.

Now with your permission I would like to mention a few existing problems and some suggestions for the future. To the public and to a health adminstration an item as important as hospital beds is the purity and cost of drugs. Our country is becoming self-sufficient in drugs and Pharmaceuticals and we wish that within a short time we will stop all imports. But the drug adulteration is increasing fast and specially of life saving drugs. The cost of the drug is also increasing day by day and it is now-a-days becoming difficult for a middle class family to shoulder the burden of drug cost. It has been proved that the selling price of drugs is anything from 2 to 4 times to 100 times its cost of production. I think severe control on purity and cost of drugs is absolutely necessary and for that standardisation too. A suitable method should be involved to do this.

In our country we have no social security schemes. We have neither sickness insurance nor old age pensions.

The earlier we progress on the path for a welfare state and put into operation the Social Security schemes the more we will get the co-operation from the people in work and production. Though the Employees' State Insurance scheme is created for Industrial workers, we should implement it keeping in mind that ultimately it has to develop into a National Health Service. In spite of development in Health an Medical services in our country there has been very little improvement in the environmental sanitation in the rural areas. I think emphasis put on the

improvement in this sector needs more weight and also urgency. All the gastroenteric infections like Cholera, Typhoid, Dearthrea, Dyspepsia etc. and many of helminthic diseases like hook worm, round worm, thread worm, guinea worm, etc. could be wiped out by these measures and I think these are the most common diseases. Hence more efforts should be devoted to Environ Hygiene. Another factor necessary for sound health is good nutrition and mal-nourished people could become prey easily to all sorts of diseases. A policy of good nutrition in any country or state could not be implemented if there is no price control on food stuff and if the wages are not related to the cost of living and food prices, all these always go hand in hand. I think the Govt. basically implementing these policies also should consider them together

Another important factor related to this is the food adulteration, which is very common in our country. I think ours is one of the countries or possibly the only country where food adulteration is done on such a vast scale. There are a no of defects in the implementation of the food and drugs adulteration Act, and in the Act, itself. These need immediate attention and careful implementation Legislative measures are not the only method, but serious measures should also be adopted for this work

In the same category belongs the absence of Public Health Act for each state in our country It is high time that the Model Public Health Act which has been circulated before a long time should be immediately adopted by each state and they should start implementing this Even a simpler and most essential thing like notification of infectitious diseases is not done in our country except in some big cities with Municipal Corporation. Even these notifications are very faulty and incomplete, - thanks to a no of unregistered unqualified quacks practising all over

I think some of the above could form a basis of advance in medical care of the community in our State and today when we are thinking in the terms of ideals like eradication of all diseases and positive health measures, we should not forget this thinking, a solid foundation and basis on which only further progress should be built.

